SEP 2 1920

AUGUST 15, 1920.

WHOLE SERIES, VOL. XLIV. No. 8. THIRD SERIES, VOL. XXXVI.

The THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE

A Monthly Journal of Practical Therapeutics

Edited by

H. A. Hare, M.D.

Professor of Therapeutics and Diagnosis in the Jefferson Medical College,

GENERAL THERAPEUTICS,

and

Edward Martin, M.D.

Formerly Professor of Surgery in the University of Pennsylvania,

SURGICAL AND GENITO-URINARY THERAPEUTICS.

EDITORIAL OFFICE, N. W. Cor. 18th and Spruce Streets, PHILADELPHIA, PA.

SUBSCRIPTION RATES:

United States and Mexico, one year, ...	Two Dollars.
Canada, one year, ...	Two Dollars and Fifty Cents.
Foreign Countries (postage prepaid), one year, . . .	Ten Shillings.

E. G. SWIFT, Publisher, - - - DETROIT, MICHIGAN, U. S. A.

FOREIGN OFFICES:

LONDON, ENGLAND— 50 & 54 Beak St., Regent St., W. SYDNEY, N. S. W., AUSTRALIA—125 York St.
WALKERVILLE, ONT., CANADA. MONTREAL, QUE., CANADA—45 St. Alexander St.
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Whole Series, Vol. XLIV. | DETROIT, MICH., AUGUST 15, 1920. | Third Series, Vol. XXXVI, No. 8.

ORIGINAL COMMUNICATIONS.

APPENDICITIS THEN AND NOW.[1]

BY JOHN B. DEAVER, M.D.,

Professor of Surgery in the University of Pennsylvania.

It is not without considerable hesitancy that I stand here this evening, within the precincts made sacred by the tradition of the great men who in their day were wont to address your student body, men whose fame has shed luster upon your college and upon the name of Philadelphia as a great medical center. The names of Gross, Pancoast, Keen, and your most distinguished Professor of Surgery, Dr. J. Chalmers DaCosta; the late Dr. J. M. DaCosta, who was Professor of Medicine in the College for years; Dr. H. A. Hare, your distinguished Professor of Therapeutics; and your present Dr. McCrea—all of them indissolubly connected with all that stands for progressive medicine and surgery here and throughout the world.

It is therefore no mere formality for me to express my great appreciation of the honor and the privilege of addressing you this evening. Moreover there is much fascination and not a little satisfaction in reviewing the experiences of a surgical lifetime concerning the subject of appendicitis. I verily believe that few, if any, of the moot questions in medical history have in their time called forth a more general, wide-spread and, I might add, acrimonious discussion than centered upon this topic. Not only was the controversy as to the surgical or non-surgical treatment of appendicitis the occasion for unpleasant personalities, that were as galling as they were undignified and unjust, but it was the cause of bitter enmities that often persisted during a whole lifetime. From the beginning of my recognition of the importance of the potential mischief resident in the appendix, I was one of the ardent advocates for its removal in acute cases of inflammatory disease of the organ, and later on also for its routine removal in many diseases of other abdominal viscera. Arrayed with me on the affirmative side of the question were men like Morton, Pepper, Osler, the two Prices of this city, Maurice Richardson, John Murphy, and others who have passed on to their reward; and still others, McBurney, Keen, the Mayos, Ochsner, and many more who are happily still keeping alive the good name of surgery in America, and whom I deem it a privilege to count among my friends.

Prominent among contemporary opponents to early operative treatment of appendicitis was Nicholas Senn, who on one occasion at a meeting of the American Medical Association did me the honor of declaring in public that a surgeon holding the views I was advocating was so questionable an ornament to the profession that he ought to be deprived of his privileges and of his diploma. My answer to his insinuation, I am afraid, was about as flattering to my denouncer as was his

[1] Read before the Jefferson Academy of the Jefferson Medical College, Philadelphia, May 5, 1920.

accusation to me. A few days after Dr. Senn's arrival home he wrote me: "While we fight like bulls within the arena, behind the scenes we are peaceful lambs; I am very anxious to have you address the Senn Festsschrift Medical Society." This is by no means an extreme nor an isolated example of the bitterness that marked the stormy controversy at its height. But the atmosphere has been cleared since those days, and the primary question no longer is whether to operate but rather when and perhaps how to operate.

There are a number of strange facts connected with the history of appendicitis, of which none perhaps is more remarkable than that the early nineteenth century observers of known acumen and insight should so often have been so close to solving the problem of phlegmon in the region of the right iliac fossa without having arrived at a correct solution. Also it is difficult to conceive, in view of the overwhelming force of facts which neither theory nor speculation could controvert, why the profession was so slow to concede the *rationale* of surgical treatment of appendicitis.

The first of these phenomena is probably more easily explained than the second. Theories die a hard death, the agony being especially great when a name so beclouds the actual facts as did the early designations—typhlitis, perityphlitis, or paratyphlitis—for the disease that finally became known by its modern term of appendicitis. This name of itself, however, was also a fruitful source of controversy, since the term appendix is not an exact one for the vermiform process, and moreover the hybrid combination, as it was often called, of a Latin derivative and a Greek ending was offensive to the purists. Strain as both classes of objectors might, they were finally compelled to accept the term because it at once indicates the pathogenesis and the seriousness of the disease. Among other reasons why the true nature of the disease failed of earlier recognition was that the study of pathology of those days was practically limited to post-morten observations, when the effects of the inflammatory process so entirely dominated the picture as to obscure its underlying cause. Furthermore surgeons had not yet gained the necessary courage to enter the peritoneal cavity, and thus the vermiform diverticulum of the cecum was able to continue to abide in seclusion and in apparent innocence until its deceptive character was revealed beyond cavil in 1886 by Reginald Heber Fitz, of Boston.

Not that Fitz was the first to suggest operative treatment for the disease. Before that time, it is true, Hancock of London, in 1848, had planned and successfully executed a laparotomy for periappendicular suppuration, and proposed similar treatment for all cases with abscess, before pointing or fluctuation had occurred, and even before adhesions to the abdominal wall had developed. But his advice remained unheeded until 1856, when George Lewis, of New York, observing 47 deaths in 48 cases of abscess due to foreign body in the appendix, again emphasized the importance of early operation before fluctuation could threaten and in all likelihood exact the life of the patient. Another decade passed before Willard Parker (1866) courageously advocated and practiced early operation, reporting four operations with three recoveries. Parker considered surgery useless in the absence of adhesions, but deemed it advisable and comparatively safe after adhesions had probably formed—that is, between the fifth and the twelfth days. The prognosis of the disease he unhesitatingly pronounced as bad, death being the general result. Bull, another pioneer in the field, was equally pessimistic in his report, in 1873, of sixty-seven cases with forty-eight per cent mortality. But after this time the operative treatment of appendiceal abscess began to find some favor, and the results were also more encouraging. By 1882 Noyes was able to collect one hundred cases treated by puncture or incision, with only fifteen per cent mortality.

But it remained for Fitz to give the great impetus to the study of disease of the region of the appendix. In his paper entitled "Perforating Inflammation of the Vermiform Appendix," read (June 18, 1886) before the then newly-formed Association of American Physicians, and published in the *American Journal of the Medical Sciences* (1886, xcii, 321), he disclosed the unmistakable evidence of the exact relation of inflammation of the cecum and that of the appendix to peritonitis and perityphlitis, showing, on a basis of 209 cases of the latter, that the symptoms were the same as those observed in 257 cases of perforation of the appendix. In 1888 Fitz published a second paper in which he advanced the then radical but now, proven to be, sound theory that the conditions variously described as typhlitis, perityphlitis, paratyphlitis, appendicular peritonitis, perityphlitic abscess, are but varieties of one and the same disease namely, appendicitis.

Fitz's communications naturally aroused universal interest and stimulated the controversy which was to assume such tremendous proportions.

Although it took considerable time, nevertheless it was easier for physicians to yield their ingrained opinions as to the actual site of the pericecal or periappendicular disease than it was to dispel the illusion that the inflamed appendix discharged the products of inflammation into the intestines and that with this process the appendicitis subsided. This in spite of the fact that the fallacy of the reasoning was time and again exposed at the operating table, which demonstrated that the appendix too often relieves itself by necrosis of its walls and by perforation with subsequent abscess formation and escape of pus into the intestine or eventually into the peritoneal cavity, and that pus may be and is present in the majority of cases without perforation of the appendix.

In a line with this fallacious reasoning was the theory regarding the etiology of peritonitis. In those days we heard a great deal of idiopathic, traumatic, and chemical peritonitis, and it was only with the advance in the knowledge concerning appendicitis that it finally became recognized that the one and only cause of peritonitis is infection from some primary focus. One of the most vivid recollections of my student days is the impressive figure of that Patriarch in Medicine, as he was fondly called by the boys, Alfred Stillé, standing in the class-room twirling his glasses and thundering forth the dictum: "No matter what others may teach, I say, gentlemen, there is no such thing as idiopathic peritonitis, and the day will come when the truth of this statement will be made plain." Happily Stillé lived to see his prophecy realized. The expressions idiopathic, traumatic, chemical peritonitis are in a fair way of being stricken, as they should be, from the vocabulary of medicine.

With the ever-growing stimulus to the study of the disease and the recognition of its importance, appendicitis became almost fashionable, and with the increasing number of operations many early views were destined to undergo modification. Foremost among such views was the theory, generally prevalent, which referred its etiology mainly to the presence of foreign bodies, fecal concretions, or ingested materials such as seeds, fruit-pits, and the like. This theory was soon exploded by the large number of cases with or without perforation in which no such foreign bodies were demonstrable. Furthermore the observation was very frequently made, either at autopsy or during operation for other intra-abdominal disease, that a fecal concretion or inspissated mucus was present within the appendix without evidence of inflammation and without a history of appendicitis. On the other hand, it was soon noted that in every case of appendicitis there was present the colon bacillus, either in pure culture or associated with other pyogenic organisms. Pure cultures of the bacillus were obtained from the walls of an inflamed appendix, as well as from the pus of an appendiceal abscess or from peri-

tonitis, etc., thus establishing the rôle of the bacterium in the etiology of the disease. The appendix it appeared was a peculiarly favorable medium for this destructive organism, which might rest there with impunity until aroused by circumstances that favored its activity.

It would be wearisome and altogether unnecessary for me to dwell upon the influence of age, sex, diet, violent exercise, cold, etc., as predisposing factors to appendicitis, factors which were early recognized and accepted.

Diagnosis of course presented many difficulties then, and even now is not always simple. Formerly diagnosis was often missed because of the dominance of the cecum in the mental picture of the diagnostician, but as in the course of time this image became obliterated and in its place appeared the picture of an inflamed, angry appendix, some of the difficulties of diagnosis also began to fade. Mistakes in diagnosis also were and to some extent still are made because of failure to appreciate the sequence of the cardinal symptoms, pain, soon localizing in the right iliac fossa, accompanied by tenderness and rigidity; vomiting, fever. And a frequent source of error was and still is due to the fact that in a functionless organ like the appendix the pain is apt to be referred and its indications misconstrued. Another considerable cause of confusion was the phenomenon of left-sided pain, which as we now know is due to the pelvic position of the appendix. The rôle of the position of the appendix in determining variations in the pain soon became recognized as the number of observations of the autopsy *in vivo* increased. In the early days also a valuable point in arriving at a probable diagnosis based on the symptom of pain, was McBurney's observation, published in 1889, that the seat of greatest pain, as determined (as he described it) by pressure of one finger, is one and a half to two inches from the anterior superior spinous process of the ilium on a straight line drawn from that process to the umbilicus, the point to-day as familiar to the layman as to the professional man as McBurney's point.

It did not take long to evolve the clinical picture of appendicitis as we know it to-day, but much, very much active propaganda was required to convince physicians, and surgeons also, that the only rational treatment of this insidious disease is operation. It took many years to eradicate the foolish notion of waiting for the appearance of unmistakable evidence of pus before resorting to surgery, and sometimes the eager surgeon had to adopt so unsurgical, risky, and doubtful a procedure as to attempt to demonstrate the presence of pus by means of the aspirating syringe. A great deal of misapprehension also prevailed as to the signs of perforation. It was generally believed that perforation always manifests itself either by violent onset of the symptoms of the disease or by a sudden exacerbation of existing symptoms, although surgeons were daily demonstrating that perforation often takes place without producing marked symptoms at the beginning of the disease, and that preceded, as it often is, by the formation of plastic exudate, no sudden increase in the severity of the symptoms need follow; the abscess may then form slowly and increase considerably in size, and by the time it is discovered will have done all the mischief of which it is capable.

It was, to say the least, humiliating to be called in on case after case, and be compelled against one's better judgment to wait in apparent calmness for the appearance of peritonitis before daring, or rather being permitted, to operate. Medical men and conservative surgeons were satisfied with saving eighty per cent of their patients on the basis of the observation that about that number of cases go on to resolution and recovery by expectant treatment. But the disciples of the more radical school felt sure that they could save at least ninety-nine per cent by early operation, making their slogan, which brought anathema upon them, "Operate every case of appendicitis

before pus and peritonitis get in their deadly work," to which they later added the dictum, "Remove the appendix every time you have the chance, and avoid the possibility of future trouble."

How the first doctrine was received forms an interesting chapter in medical annals. For example, on one occasion in discussing a paper read by me before the College of Physicians (May 2, 1892), the late Dr. J. M. DaCosta, while agreeing with me in certain points of treatment, one of which—purgation—I and probably he also later abandoned, stated that he was not prepared to go so far with me as to advocate operation for every case of appendicitis even in the first attack. "It seems to me," he said, "if we take this view a person with appendicitis will go to bed not with the sword of Damocles suspended over his head, but with the scalpel of the surgeon already on his abdominal wall." The prophecy has been fulfilled by a reversal of conditions. To-day the victim of appendicitis does indeed go to bed with the scalpel of the surgeon already on his abdomen, and unless he does so the sword of Damocles actually is suspended over his head in the shape of recurrences, if not death. In justice to Dr. DaCosta I should add that he at the same time admitted the probability of his opinion being antiquated in six months' time, in view of the great progress that was being made in surgical technique. Arguing on the same lines of opposition to operation in all cases, no less an authority in surgical matters than the late J. William White, in 1892, declared that to advocate dogmatically and as a matter of routine the advisability of surgical interference at the end of twenty-four or forty-eight hours in cases that showed signs of advancing disease was dangerous and harmful, and "would be distinctly to increase the mortality of appendicitis."

The argument advanced then for early operation has lost none of its value; for in spite of wide experience no one can as yet definitely foretell which case will and which will not go on to suppuration, peritonitis, and probably death. The responsibility of the physician and the surgeon in the early days in counseling against operation was great, but it is infinitely greater now with the incontrovertible evidence of practically one hundred per cent recoveries when operation is done early in the disease.

Opposition to the use of opiates was active very early in the game, but the free use of cathartics in the medical or preoperative treatment prevailed for some time. Although myself at first an advocate of purgation as the best anodyne, I soon realized the error of my ways and the possibility of harm excited by the use of salines and even rectal injections, and recognized the advantages to be gained by complete physiological and anatomic rest in cases that were seen "too late for early operation and too early for late operation." This together with continuous enteroclysis, as originally directed by Murphy as a postoperative measure, but which also finds a place as a preoperative one, is the routine generally adopted at the present time while waiting for the most favorable moment for operating the acute case.

"The advocate of the soothing death lullaby of opium," as Murphy forcibly expressed it, "was not easily moved from his position, but he finally yielded; but the equally persistent and belligerent advocate of the death-groaning calomel and castor oil and the nine-lived procrastinator have not yet capitulated." Though written sixteen years ago these accusations, especially the latter one, still find application in some benighted quarters at this late day.

While it is gratifying, to say the least, to witness the victory to-day of the persistent propaganda of yesterday, the battle is not yet entirely won. Not until the nine-lived procrastinator finally disappears will surgery enjoy the complete triumph of having added one to the list of curable diseases, a triumph which is all the more impressive when we consider how often we are confronted with the mournful realization of our limitations.

UTERINE CURETTAGE: A BAD HABIT.

BY ALFRED HEINEBERG, P.D., M.D.,

Associate in Gynecology, Jefferson Medical College; Obstetrician to the Jewish Maternity; Assistant Gynecologist, St. Agnes Hospital, Philadelphia.

Bad habits are as difficult to overcome in medical practice as they are in other fields of human activity. The first and most important step in their eradication is always the recognition and acknowledgment of their harmfulness; and the purpose of this paper is to set forth the evils of one of the commonest of medical habits, viz., curettage of the uterus.

The accumulated evidence against its practice, in all but a limited variety of conditions, is not only voluminous but convincing. It began to appear before the operation became a generally accepted surgical procedure. Indeed, it was but a short time after Sims introduced the sharp curette into medicine that Emmet recognized its possibilities for harm and cautioned against its use in the followng words: "As regards the instrument of Dr. Sims, I honestly believe that the ingenuity of man has never devised one more capable of doing more injury." Notwithstanding this caution, expressed more than forty years ago by so eminent an authority and conservative specialist, and despite all that has been written and taught in the last few years about the futility or harmfulness of uterine curettage, there is probably no operation which is still so frequently abused. Only recently, Polak expressed his disappointment over the attitude of the profession to the curette in the following terms: "It seems almost impossible to educate the profession to the acceptance of the fact that the curette has but two well-defined indications: First, to remove the products of cenception before the eighth week; and second, to make the diagnosis in intermenstrual uterine bleeding at or near or after the menopause." The abuse of the curette is almost as frequent and certainly less excusable in the hands of the trained gynecologist as in the hands of the general practitioner. The former should know its limitations and by example guide the practice of the latter.

How may we best determine the necessity for curettage? Only by a thorough study of the changes which occur in the endometrium and endocervix during normal and pathological conditions. Unless that necessity can be demonstrated, the curette should be kept out of the uterus. Without entering into a detailed description of the histologic changes which occur in the endometrium as the result of menstruation, we may describe the gross changes as follows: "During the intermenstrual or resting phase, which is of about twelve days' duration, the uterine mucosa is about 2 to 3 mm. in thickness, grayish pink in color, and of semifluid consistence. The surface appears pitted with small openings—the mouths of the glands which contain very little mucus. As portions of the mucosa project into the underlying muscular layer, the line of demarcation between them is not well seen." Curettage during this phase removes only thin shreds of tissue, consisting of normal glandular, epithelial, and stroma cells. The premenstrual phase which follows (beginning about eighteen days after the last menstrual period) is characterized "by swelling and proliferation of the mucosa, which increases to about 6 or 7 mm. in thickness. The increase in thickness is due mainly to edema—*i.e.*, an increase in the amount of fluid in the intercellular spaces and also to an enlargement of the epithelial cells, glands, and blood-vessels. A certain amount of cell multiplication also takes place, being more marked in the superficial layers. The glands are distended with mucus, and hemorrhagic extravasations are to be seen in the stroma." If the mucosa be removed with a curette in the premenstrual phase, especially during the latter part of it, it comes away in long, thickened, ribbon-like

masses which may be easily mistaken for pathologic conditions. Consequently, the relation of the time of curettage to the menstrual period should always be noted, in order to avoid mistakes in histologic diagnosis. The adoption of such a measure as a routine practice would result in fewer laboratory reports of pathologic hyperplasia of the endometrium or so-called chronic endometritis. During the menstrual phase, which merges imperceptibly with the intermenstrual phase, the mucosa decreases in thickness through discharge of the menstrual fluid and detachment of the superficial epithelium and stroma cells. "Toward the end of the menstrual phase regeneration begins, the leucocytes absorb the stroma cells and red blood-corpuscles. All the cells diminish in size and the whole mucosa shrinks." Curettage is rarely, if ever, deliberately performed during the menstrual phase. The post-menstrual phase: "The process of repair begins before the cessation of the hemorrhage. It corresponds to the period of regeneration or involution. The mucosa increases in thickness by new cell-formation, replacing the loss of tissue during the hemorrhagic phase. The blood-vessels and glands gradually decrease in size and the mucosa takes on the appearance described under the resting or intermenstrual phase."

Let us consider the conditions which we have attempted to benefit by curettage and determine, if we can, if such treatment has been beneficial or harmful. They may be divided into two groups. To the first group belong dysmenorrhea, acute anteflexion, sterility, leucorrhea; to the second, menorrhagia, metrorrhagia, purulent or putrid discharge. In the second group there are pathologic changes in the endometrium, resulting either from ovarian hyperfunction, infection, or retention of products of conception. The dangers of curettage in the conditions of group two have been so thoroughly considered by authoritative writers as to leave little excuse for its performance even by the occasional operator. Their views have been accorded general acceptance, with the result that there are fewer curettements performed in incomplete abortion and puerperal infections. I shall not dwell further upon this phase of the subject at this time.

Is there any evidence to convince us that the endometrium is sufficiently diseased to produce the conditions of the first group?

What do we find on removal of the endometrium with a curette in cases of dysmenorrhea, acute anteflexion, or sterility? In the large majority of cases there is disclosed either a normal endometrium, exhibiting one of the menstrual phases, or one in which the report from the pathologist simply states hyperplasia or interstitial endometritis. The laboratory report will depend very largely, as already noted, upon the time at which the endometrium is removed. If the removal be accomplished during the premenstrual phase, the endometrium is normally thick (comes away in ribbons) and presents histologic changes, such as round-cell infiltration, increased vascularity, etc., which might easily be mistaken for pathologic hyperplasia. Removal during the intermenstrual phase reveals a thin endometrium which comes away in shreds, frequently so scant that it does not permit of histologic study. Practically in no instance does the endometrium show changes which could account for the sterility or dysmenorrhea. If this be so, there are no grounds upon which we can base the hope that the endometrium regenerated after the curettage will be an improvement over the one removed.

Reasoning from the clinical aspect, we might justify curettage by the relief it seems to afford in a certain percentage of the cases of dysmenorrhea. This is no doubt true. But if we follow up the cases for a long time after the operation, we find that the improvement in the large majority lasts only a few months. Furthermore, are we justified in ascribing the improvement to the removal of the endometrium? Is it not due rather to the divulsion of the internal os? My experience in the last few years since I have abandoned curettage in

dysmenorrhea and acute anteflexion and employed only wide divulsion of the cervix (and that in only a small percentage of cases) has led me to believe that the relief is just as great after divulsion alone and the patients are spared the danger of curettage. That curettage is a real danger has been pointed out by Curtis in a bacteriologic study of the endometrium, and I shall have occasion to refer to his work later on. The advancement in our knowledge of the causation of dysmenorrhea and the results of treatment other than operative would seem to indicate that there is rarely, if ever, a necessity to resort to even forcible divulsion of the cervix and *never* to curettage.

What is the present status of dilatation and curettage in the treatment of sterility? There are several facts which stand out prominently in a careful study of cases of sterility. First, that many of the uteri are under-developed or retain their infantile condition and are neither anatomically nor physiologically in a state to encourage retention of an impregnated ovum. Second, that in a large percentage of well-developed uteri in which conception fails to occur, the cause of the sterility will be found either in the semen, in the cervical discharge, in adnexal disease, or in ovarian dysfunction. Sterility in the male can be demonstrated in from 30 to 40 per cent of the cases carefully studied. Cervical discharges which not only fail to support but are actually toxic to spermatozoa can be demonstrated in a surprisingly large proportion of the cases, when studied by the method of Hühner. Manifestly, no operation on the uterus can help in the cases in which sterility exists in the husband, and I am convinced by recent experiments and experience that the results following removal of the endometrium or endocervix in cases of spermatoxic cervical discharge do not enhance the chances for conception as much as other methods of treatment directed toward the cure of the endocervicitis. If the sterility be due to ovarian dysfunction, neither dilatation and curettage nor any other operation upon the uterus can be expected to do good.

Further evidence of the futility or harmfulness of curettage for sterility is afforded by a review of over 100 cases of reoperation for various pelvic lesions by Polak in the Long Island College Hospital in one year. He states that "Among this number we find forty-three (43) sterile women, with chronic pelvic inflammatory disease, who had had dilatation and curettage for the cure of leucorrhea and their sterility. Of this number thirty-nine have been subjected to this so-called slight operation without having had their husbands examined for potency and previous or existing infection. As we have shown in a previous paper on the subject of sterility, the male member of the partnership is a very important factor in the cure of this condition, for while he may not have gonococci, few men who have ever had a posterior urethritis are free from staphylococci in their prostate. The staphylococcus is just as competent to produce an endocervicitis in a woman as is the gonococcus, and a chronic endocervicitis is a frequent cause of sterility."

The statistics presented by Kelly show that less than 15 per cent of the cases of sterility subjected to dilatation and curettage become pregnant. Furthermore, curettage of the uterus is very often followed by a discharge which had not existed prior to the operation, and must be attributed to the introduction of infecting organisms into the uterus at the time of the operation. A convincing proof of this statement is afforded by the bacteriologic studies of the endometrium by Curtis. His work differs from that of previous investigators in that he excised, ground and cultured the entire endometrium from uteri (exclusive of the cervix) removed for various conditions, instead of employing platinum loop cultures of the endometrium after hysterectomy, or the culture of uterine scrapings after curettage. In the Curtis group of cases the endometria of 26 nulliparæ and 47 multiparæ, who gave no history or gross

evidence of pelvic infection, revealed the presence of bacteria in only five (3 nulliparæ, 2 multiparæ), *three of which had been subjected to dilatation and curettage within eight days of the hysterectomy.* The two multiparæ, probably infected at the time of curettage, showed in addition histological evidences of endometritis, while the microscopic examination of the 23 non-infected nulliparous patients showed no signs of inflammation. These cases demonstrate that curettage is likely to be followed by infection and endometritis, and consequently we are not justified in removing a normal endometrium in attempting to relieve dysmenorrhea or sterility.

What is the status of curettage in the treatment of leucorrhea? Is it beneficial or harmful? Before answering these questions we should understand clearly the causes of mucoid or mucopurulent discharge from the uterus. A moderate amount of discharge immediately preceding or following menstruation must be considered physiologic, the result of evolutional and involutional changes in the uterine glands. To attempt correction by curettage or any other method of treatment is not only futile but uncalled for. Persistent leucorrheal discharges originate almost exclusively in disease of the cervix, either endocervicitis, erosion, or malignancy.

Histologic studies of the corporeal endometrium confirm this statement. In 1800 pathologic cases studied by Cullen in Kelly's clinic he found only 49 instances (less than 3 per cent) of endometritis, exclusive of tuberculous infections. A similar experience is reported by Charles Norris in a histologic examination of 995 endometria. Confronted by such overwhelming evidence against the participation of the corporeal endometrium in the production of persistent leucorrhea, what justification is there for its removal, especially if the operation by which it is removed is likely to carry infection from the cervix into the uterine cavity? After a critical review of 6219 curettements, constituting the entire or portion of 36,629 operations performed in 20,011 patients at the Woman's Hospital in New York in eleven years (1908 to 1918 inclusive), Rawls concludes that about 96 per cent of gynecological cases show no endometrial change, and that the curettage is of questionable therapeutic value in the 4 per cent in which endometrial change can be demonstrated. Furthermore, it has been abundantly demonstrated by Curtis, Hunner, Findley, myself, and several others in recent years that cervical leucorrhea from various causes can be cured by methods which do not endanger the corporeal endometrium or uterine adnexa. Finally, the statistics of Cullen, Norris, and Rawls, combined with the studies of Curtis, present a strong condemnation of that pernicious and thoughtless practice which includes curettage as a routine measure in most operations upon the pelvic viscera.

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DIABETIC ACIDOSIS; TUMOR IN THE THORAX; ANEURISM OF THE AORTA; PARENCHYMATOUS NEPHRITIS; TYPHOID FEVER; AND SACROILIAC STRAIN—A CLINIC AT THE JEFFERSON MEDICAL COLLEGE HOSPITAL.

BY H. A. HARE, M.D.,

Professor of Therapeutics and Diagnosis.

I am fortunate in being able to show you to-day a case of diabetic coma, the more so because in a previous clinic when lecturing upon this disease I pointed out that the urgent breathing of so-called "acidosis" is not associated with cyanosis, but oftentimes the lips of the patient seem more pink than normal. This is due, you will recall, to the fact that there is no interference with the oxygen carrying power of the blood or in the ability of the blood to obtain oxygen from the lungs, but arises because of the fact that the body has been deprived of its carbonates, and other bases, to such an extent that the CO_2 is not carried to the lungs by the blood stream as it is in health. In other words, in this type of dyspnea the patient is not starved of oxygen but cannot utilize it even when it is present in excess. For this reason the use of oxygen inhalations in diabetic coma is practically valueless.

You will recall, too, that the term acidosis is an unfortunate one if it conveys to your minds the idea that the blood stream is more acid than normal. As a matter of fact its chemical reaction is unchanged, except possibly in certain patients who are moribund. There is, however, in such cases an excess of beta-oxybutyric acid in the body which acts as a toxic substance and which can only be gotten rid of by being oxidized into diacetic acid, and then one step further, into non-toxic acetone. The administration of bicarbonate of sodium by means of the Murphy drip, by hypodermoclysis, or even by intravenous injection, does good not that it acts as an antacid, but because it provides the patient with the carbonate of which the system has been robbed, and by so providing carbonate the CO_2 is carried to the lungs and eliminated, and oxygen can then be utilized by the tissues to reduce the toxic substance.

As the condition of diabetic coma is chiefly due to the breaking down of the fats and to the starvation of the patient of carbohydrates it is well to use, by the Murphy drip, with or without the bicarbonate, glucose, levulose, or what I have frequently employed, dextrimaltose, usually giving a solution of 5 per cent of bicarbonate of sodium and 5 per cent of dextrimaltose. In very urgent cases this may be given intravenously.

You will note the apathetic appearance of the patient, the pallor of the face and the redness of her lips. Unfortunately, be the treatment what it may, after the onset of diabetic coma the patient almost always dies, even although, for a short time after treatment is instituted, marked improvement takes place and consciousness returns.

I also show you a patient who presents a very interesting condition in the left portion of the chest, which, from the physical signs, I was led to believe was due to a walled-off empyema or an accumulation of other fluid, or to some thickening of the lung and pleura as the result of an attack of pleuropneumonia. He suffers little pain and only some shortness of breath on exertion. The *x*-ray examination, as you will see from this plate, reveals a large tumor apparently in the lung or displacing the lung, which tumor is about the size of a muskmelon, with definite edges, and which is probably sarcomatous, springing from the mediastinal tissues or possibly from one of the ribs posteriorly, since the *x*-ray also shows that one of the ribs is eroded and necrotic.

We have three courses which may be pursued in this patient: First, to have

surgical interference; that is to say, an exploratory operation, with the understanding that if a condition is found which can be removed, the surgeon will proceed. Such an operation is exceedingly grave for obvious reasons. The chance of the patient surviving it is very poor. Even if he does survive the operation, his chance of ultimate recovery is also poor. So far as operation is concerned I believe that he will live much longer if surgical interference is not attempted.

The second procedure would be to introduce a hollow needle, attached to a syringe, into this mass, using the fluoroscope as a guide, with the object of determining if it contains fluid or to see if we can extract from it cells which under the microscope would give us an accurate diagnosis. By this means we might be able to satisfy a laudable curiosity, but I do not see that any therapeutic measure would be indicated, the more so as there is no history of syphilis and a negative Wassermann reaction, so that a gumma can be excluded.

The third procedure, if I may use this term, is to leave the patient alone. You must always remember that a patient seeks an accurate diagnosis not to satisfy curiosity or to meet with the demands of scientific accuracy, but in order that something may be done for his betterment. This man will live longer and feel better if we do not meddle with him.

The next case is an aneurism of the aorta occurring in the ascending portion of the arch, which you will recall is the part of this vessel which suffers from this lesion in the vast majority of cases of aortic aneurism. This aneurism is shown by the *x*-ray not to be sacculated, but to be fusiform, and, therefore, it does not lend itself to the operation of wiring with electrolysis. The best treatment for this patient is absolute rest in bed for many weeks, the pushing of iodide of potash and mercury in as large doses as can be tolerated, and the administration of ten or fifteen minims of tincture of aconite three or four times a day to quiet the heart and to diminish pressure on the sac. The fact that she has a 4+ Wassermann makes the iodide and mercury an essential part of the treatment.

The fourth case is that of a man in the early thirties with general anasarca and the peculiar pallor of chronic parenchymatous nephritis. He has not had increased blood-pressure, such as is often met with in these cases, and he suffers very slightly from many of the symptoms that often annoy these patients greatly, for there is no impairment of his vision, no shortness of breath, and no headache. Nothing that we have been able to do, however, has increased his urinary flow above 600 to 700 Cc. in each twenty-four hours, although he has been under observation for many weeks, and every drug which is supposed to increase urinary flow, from the potash salts to acet-theocin-sodium, has been given to him without result, including bitartrate of potassium and juniper berries. We have been unable to apply cups over his kidneys because of the edematous condition of his back. The case seems to be one in which we are justified in resorting to slitting the capsule of the kidney, or to decapsulation, with the hope, originally brought forward by Edebohls as to decapsulation and Reginald Harrison as to slitting the capsule, that the relief of pressure will enable his kidneys to normally functionate. The non-protein nitrogen of his blood is between 70 and 90 mg. per cent, which is dangerously high, and he has marked retention of the chlorides; but neither a salt-free diet nor a meat-free diet has influenced his case in the slightest, nor could we produce any condition in his urinary flow when we turned to the theory of Epstein that as urea was a diuretic a full meat diet might be advantageous rather than disadvantageous. Although I do not approve of the decapsulation operation in the vast majority of cases because I cannot see how it can do good, nevertheless in a desperate case like this Professor

DaCosta has agreed with me that the procedure is a wise one, and expects to operate day after to-morrow, slitting the capsules.

(Note: The patient having consented to the operation, later changed his mind and left the hospital.)

The fifth case is one of typhoid fever, which I bring before you only to illustrate two points: First, that her chart at this time, the twenty-first day of the disease, is showing the steep curves of early convalescence, the fever being nearly as high as ever in the evening and normal or subnormal in the morning. These steep curves, therefore, are full of promise rather than alarm, and this period of the disease has been called the "period of ambiguity," or the "period of changing fortunes."

The other point is the treatment of the boils which have developed on her back. If recognized early these can often be aborted by painting a ring of collodion around the inflamed zone, care being taken that no collodion touches the center of the boil. If pus forms a match stick, with a little cotton twisted around it, may be dipped in pure carbolic acid and bored into the central point, thereby preventing sloughing. Since cold bathing and good feeding have been carried out in the treatment of typhoid fever this complication of furunculosis is much less frequently met with than in the days when we did not bathe and did not feed.

The last case is a fireman by occupation, whose duty it is to shovel coal under a boiler. He comes in with a diagnosis of sciatica, when in reality he has sacroiliac strain. In such a case you can exclude sciatica by flexing the thigh on the pelvis and then extending the leg on the thigh. This last movement cannot be carried out in sciatica because of the increase in pain. You can exclude arthritis of the hip-joint by flexing the thigh on the pelvis and the leg on the thigh, and then abducting the knee so that it approaches the surface of the examining table. This can be done readily in sciatica, but not in arthritis. You must place one hand on the anterior superior spine of the opposite side to prevent the patient from twisting his pelvis and so permitting the knee of the affected side to reach the surface of the table even if arthritis is present.

We have, therefore, excluded sciatica and arthritis in this case, and when we examine the patient's back and put him through certain movements we find points of tenderness and other signs indicating sacroiliac difficulty. This condition is treated not by the administration of the salicylates, but by strapping the sacroiliac area with two-inch adhesive straps in such a way as to put the parts at rest and provide support and, if the condition persists, by the wearing of a corset or brace which will act in a similar manner. If there is a gouty or rheumatic condition associated with the strain, the salicylates or iodides may be useful, but in the majority of cases they do no good and serve only to disorder the stomach. At a later clinic the patient was shown entirely well without medication, but wearing a support.

PITUITARY EXTRACT AS OXYTOXIC.

MAXWELL, in the *Journal of the American Medical Association* of May 15, 1920, states that most obstetricians to-day are keenly aware that in hypophyseal extract we have a powerful therapeutic principle that can be employed in labor only when certain conditions are fulfilled in the presence of definite indications. Briefly stated, pituitary extract has no place in a normal labor, and its use should be limited to uterine inertia coming on when the head is well engaged without disproportion between the child and the mother's pelvis, with complete dilatation of the cervix, and without undue thinning of the lower uterine segment. The consensus is that a 1 Cc. ampoule equivalent to 0.1 gm. of the drug is too large a dose, and that one-half or one-third of this amount is within safe limits and may be repeated frequently.

EDITORIAL.

THE EFFECT OF THE ENTRANCE OF AIR INTO A VEIN.

Thirty years ago intravenous injections were so rarely practiced that the accidental entrance of air into a vein possessed little interest to the general profession unless some operative procedure was carried on about the great vessels of the neck and thorax. For many years it was taught that air embolism was one of the most fatal accidents that could arise, and it was not until Nicholas Senn and the writer carried out two independent investigations, the results of which were published at about the same time, that the teaching of that period began to be modified.

These investigators showed that very large quantities of air could be injected directly into the circulation of animals without disastrous consequences. The instances in which air embolism have occurred from uterine sinuses are probably cases in which a clot in the form of an embolus has been really responsible for the death, or where bubbles have been found in the vessels the infection may have been due to a gas-producing bacillus.

With the thousands of intravenous injections which have been given for the use of normal saline solution and arsphenamine there must have been many instances in which air by accident entered a vein with the fluid, and we have seen this occur several times, yet so far as we know no untoward effects have been reported.

In the *Edinburgh Medical Journal* for January, 1920, Miles deals briefly with the history of this subject and reports a case in which during the clearing of the axilla in an operation for cancer of the breast, a narrow slit was made in the axillary vein. A finger was immediately placed on the opening, but on removing it to apply forceps a high-pitched hissing sound was audible. No change, however, developed in the patient's appearance, neither the pulse nor the respiration being affected. After a ligature had been applied the operator noticed a curious rhythmical swishing sound in the patient's chest which became louder and louder until it was quite audible to every one in the room, and on listening over the heart the sound suggested the churning of a frothy mass. It reached its maximum in about a minute and then gradually disappeared. The patient showed no ill effects either at the operation or afterwards.

DOGMATISM IN THERAPEUTICS AND NITROHYDROCHLORIC ACID.

In view of the fact that so much of practical bedside therapeutics must rest upon clinical observation rather than upon scientific experiment, and also because it is vitally important that such observations should be accurate, it is also essential that those who write upon this subject shall express their own views only when they have given a sufficient amount of time and study to a given drug, and its uses, to justify them in directing or correcting methods employed by their professional colleagues. All too frequently, without adequate observation, new remedies are brought before us which soon seek their proper level or go out of existence, and also all too frequently some old remedy is praised so highly that when it is tried by novices its failure to succeed in every case is a cause of disappointment or it is unjustifiably condemned, and thereby practitioners are deprived of a remedy which is really exceedingly useful.

In one of the higher type medical magazines recently a writer after having discussed a very considerable number of drugs, with particular reference to their influence upon the digestive tract, has this to say in regard to nitrohydrochloric acid: "Nitrohydrochloric acid has frequently been employed by the older physicians. It is made by mixing hydrochloric and nitric

acid, a violent reaction taking place, and the acids being split up to form nitrosyl chlorides and chlorine. There is a slight excess of hydrochloric acid, so that nitrohydrochloric acid of the U. S. P. is a liquid containing free hydrochloric acid, free chlorine, and nitrosyl chlorides (Arny)." This preparation is then condemned with these words: "It hardly seems worthy of a place in the materia medica."

Now, as a matter of fact a considerable number of practitioners believe that if the strong nitrohydrochloric acid is comparatively fresh it is an exceedingly useful remedy, and the writer of this editorial has frequently employed it with excellent results in a number of conditions which other acids do not meet.

Many years ago the late Dr. H. C. Wood was accustomed to point out that in certain conditions of hepatic torpor strong nitrohydrochloric acid in the dose of five drops, diluted with water at the time it is taken, is exceedingly useful, and he was fond of quoting English physicians in East Indian practice, who not only found it of value as a hepatic stimulant when given internally, but who used it, when diluted with water, in compresses over the liver in the treatment of the hepatitis of hot climates. He also pointed out that in many cases of impaired digestion with great mental depression almost bordering upon a true melancholia, this use of nitrohydrochloric acid often produced remarkably good effects, particularly if an examination of the urine under the microscope showed an excess of oxalate crystals.

In the many years in which we have employed this acid since this teaching by Dr. Wood, we have had repeated opportunities for confirming the correctness of his clinical observations. It will often clear up a foul tongue, a torpid liver, and remove mental depression when calomel fails, and what is more, if it is given freely, in some cases the patients after a few doses will develop a relaxed state of the bowels or a diarrhea associated with an increased secretion of bile. We have long taught that while hydrochloric acid is neither astringent nor particularly stimulating, and that while nitric acid is astringent, nitrohydrochloric acid, of all chemical acids that are used in medicine, is laxative and non-astringent in its effects.

THE DANGER OF SUBCUTANEOUS INJECTIONS OF LIQUID PETROLATUM.

Under the term "Camphor Oil Tumors" there has recently appeared in the *Archives of Dermatology and Syphilology* an article by Mook and Wander upon this subject. Their article is illustrated in black and white and with a colored plate. They collected six cases as evidence of the danger of the indiscriminate use of camphor in liquid petrolatum for the purpose of combating collapse and nearly related conditions, during the course of surgical operations or in the treatment of severe illness. The difficulty does not lie apparently with the camphor but with the fluid in which it is dissolved.

The tumors developed at varying lengths of time after injection, from two weeks in one case to eighteen months in another, and in most instances inflammatory activity of the lesion called the patient's attention to the trouble. These tumors are persistent and last for months or years. If not inflamed they have a doughy or concrete-like feeling, varying from the size of a walnut to that of an orange or larger, and are generally lobulated. The size of the tumor depends upon the amount of oil injected and the degree of the individual reaction. They are not rounded in outline, but have definite sharp angles limiting them from the adjacent normal tissues, and the bead-like infiltrations of the same nature may be traced along toward the axilla if the injection has been given into the arm, thereby simulating the metastases of malignant growth. The skin may or may not be elevated or discolored, and sometimes the tumors are only found on palpation. They are always deep in the

muscle or connective tissue. Pain is not usually felt for some time after the injection has been given.

When the inflammatory process begins there is an elevation of temperature locally, but in none of the cases observed by these clinicians did necrosis take place. The appearance of the tissues when examined under the microscope is liable to mislead. One such tumor when excised led the pathologist to a diagnosis of tuberculosis owing to its granulomatous character with many giant cells. These growths are practically identical with the so-called paraffinomas which have been recognized after similar injections of paraffin compounds. There is a large deposit of fibrous tissue, so that the growth in its early stages is certainly a true fibroma. The oil may be collected in large or small drops or cysts, the walls of which consist of from two to five concentric layers of fibrous connective tissue, the inner capsule having a perfect lining without any break in its continuity, thereby imprisoning the oil. New blood-vessels are formed and become enormously thickened.

The treatment which seems most efficacious is rest and elevation of the affected extremities to alleviate inflammation, such rest being continued over a long period of time until fibrosis is as complete as possible.

In the opinion of the authors, while excision would be ideal, all the lesions which they have met with have been too extensive for this procedure to be followed, and heat and massage are contraindicated because they increase the inflammation and tend to disseminate the oil. Apparently the most advantageous thing that can result is the increased production of fibrosis.

The important point of course is that mineral oil should not be used as a vehicle for the injection of camphor or salicylate of mercury, or calomel, or any similar substance, which is commonly given in oily solution. This is a point recently emphasized by a writer in *La Presse Médicale*. It is possible that some of the vegetable oils may produce similar results, but cases of this kind have not as yet been recorded.

That there is greater danger of emboli from paraffin oil than from vegetable oil is probably true, but the authors quote one case in which death followed the injection of olive oil. The necropsy revealed fat emboli in all the viscera, particularly the lungs and the brain. This danger can be put aside of course by carefully avoiding veins in the introduction of the hypodermic needle.

DISLOCATION OF THE SHOULDER-JOINT.

This injury, comparatively frequent, as a rule readily reduced and considered of minor moment, may in its after-effects become a source of permanent crippling, and in a much larger number of cases than is generally realized. Because of the frequency of the accident, and incident to the circumstance that the crippling is partial and not complete, the after-effects are not brought to the attention of the physician or surgeon. And since the subsequent pain and partial disability may not interfere with a given vocation it is often neglected by the patient, or attributed by him to that malady called rheumatism which covers such a multitude of diagnostic errors.

Probably led in part by these views, but mainly by a follow-on experience, Todd (*The Practitioner*, March, 1920) announces that there is no common civil accident which is more unsatisfactory as regards the ultimate functional results than dislocation of the shoulder-joint. This he attributes to the circumstance that the patient is too often transferred to the massage department, where the surgeon who did the reduction and who should supervise the treatment sees his patient not at all. The real reason for the permanent crippling he believes is a slavish adherence to traditional methods. He was informed by one insurance company that the cases of dislocation of the shoulder cost about 4000 pounds a year. The average time that the patient

spent on the pay-roll was about twelve weeks. Such results he considers deplorable and a grave reflection on our methods of treating the condition.

From a somewhat unusual experience with this class of cases Todd was struck with the great difficulty experienced by those who have been thus injured in recovering the power of abducting the arm after the limb has been bandaged to the side for a week or more following reduction. The immediate pain limitation of motion is followed within a few days by a mechanical obstruction in the form of adhesions about the lower part of the joint. If these begin to form they can be stretched or ruptured by fairly forcible passive movements. This is objected to by the patients, and rightly; and after one or two violent manipulations they rarely return to the hospital for further treatment. Moreover, even if the patients do not object such violent movements are followed by an increase of inflammation and ultimately do more harm than good.

Therefore Todd tried putting his patients up with the arm bandaged from the side on a Middeldorf triangle. This was a distinct improvement. He proceeded further to splint the arm in right-angled abduction, using a half-jacket of poroplastic felt, or non-inflammable celluloid, or papier-mâché, with a hinged joint at the elbow. The exact pattern of apparatus used is a matter of indifference, provided the arm be kept at a right angle from the side.

In not one single instance was there further trouble with abduction. Moreover, this position offers the best opportunity of bringing the torn edges of the capsule into accurate apposition. In actual practice the results were infinitely better than those by the old method. There was less pain, and recovery was complete in less time.

The patient after being placed in the abduction splint was gently massaged daily. After ten to fourteen days the splint was removed, the arm falling to the side without any difficulty. The patients were told to carry it in a sling for about a week, to perform fore-and-aft swinging movements, to rotate the arm externally and internally, and to practice abduction daily and without violence. Circumduction was the last motion attempted. The patients were not discharged well until they could lift their arms quickly and painlessly up in the air and interlock their hands above their heads.

A study of the end results in 52 cases, the average age of the men being fifty-three years and that of the women forty-three years, showed a marked improvement over those treated by pinning the arm to the side.

ACCESSORY FOOD FACTORS.

Under the name vitamines are described certain ingredients of foods, the exact function of which is unknown other than that they are essential to normal development. All animals or humans given only foods from which these substances are absent ultimately perish, and in the course of their decline exhibit syndromes characterized as beriberi, scurvy, or keratitis. Clinical evidence as to the need of these as yet not clearly identified substances is convincing. It has been shown that beriberi and rickets may be prevented, or may be cured, by adding to the dietary foods containing these substances. The laboratory men in the effort to determine their exact nature and action have experimented with a variety of animals, chiefly the white rat and the dog, and reach conclusions which they believe strengthen medical practice in that they corroborate the findings of careful observers in their dealings with the sick.

The three recognized accessory food factors are the antiscorbutic, the fat-soluble A, and the water-soluble B, or antineuritic. The water-soluble B, or antineuritic, is of vast importance to the Orientals in a diet of hulled rice. It is of no large importance as bearing upon the welfare of the American child. As to the antiscorbutic factor, it is recognized clin-

ically that scurvy is rarely found as a well-marked disease. There is much evidence to show that it is fairly common in its slighter manifestations. It is also an accepted belief that children fed on boiled or pasteurized milk, or dried milk powder, should supplement these by orange juice.

Mellanby (*Lancet*, April 17, 1920) in the hope of throwing further light on the subject of diet has conducted a laboratory study of the possible fat-soluble A accessory factor. McCollum identified this factor in a study of the growth of rats. This fat-soluble factor is absent from all vegetable fats. In the rickets experiments it has been proven that the amount of antirachitic factor is fairly high in some vegetable fats, such as, for instance, peanut, cottonseed, and cocoanut oils, and is present only to a small extent in palm kernel, linseed, and babassu oils.

Mellanby further notes that fat-soluble A does not appear to be as necessary for the growth of puppies as it is for that of rats. There must be some of this substance, but it need be present only in very minute quantity.

Hess and Unger seem to have demonstrated this same fact in regard to children. having fed them for months on a diet of dried separated milk, sugar, cottonseed oil, autolyzed yeast, orange juice, and cereal, with no abatement of growth. It seemed that in the growth of puppies and children the influence of fat-soluble A is probably smaller than that of other elements of the diet. Mellanby particularly cautions those who are extending the experimental research on rickets to children not to mix up the two types of work, namely, the growth experiments on rats and the rickets experiments on puppies. Thus in giving cottonseed oil to children Hess and Unger had in mind the generally accepted fact that this oil contained no fat-soluble A; on the other hand, that it could be classed as one of the better vegetable oils in preventing rickets. When taken in conjunction with the other conditions of diet rickets could not be expected to develop.

Something of the nature of a vitamine distributed in varying quantities in fat plays an important part in the development of rickets. Active rickets is rare after the second year of infancy. This is about the time the milk is cut down. After the puppy reaches a certain age rickets cannot be produced by diet. Moreover, there is a tendency to recover when it has been produced in early age. Even though the diet of a child is often of a more rickets-producing nature after two years of age it becomes more independent, from the rickets point of view. The author prints a photograph of a puppy put on a rickets-producing diet of separated milk, white bread, meat, orange juice, and linseed oil at the age of five months. Eleven months later the dog was healthy and showed no signs of rickets. He believes that the antirachitic factor is more necessary to the young animal.

Mellanby stresses the relation that exists between the accessory food factors and other elements of the diet. He states that evidence has accumulated which indicates that an excess of carbohydrates increases the tendency to rickets, that proteins have an antagonistic action to the development of rickets. Casein seems to have the same effect. If the antirachitic effect of protein is established this explains why milk is a better preventive of rickets than a corresponding amount of butter. It should be understood that increasing the protein alone in the absence of the antirachitic factor does not make a diet safe. It is suggested that it may be ultimately established that it is excess of carbohydrate in an unbalanced diet which is largely responsible for the development of rickets, and that it is the special function of the antirachitic accessory factor to prevent the abnormality. As to the effect of exercise in rickets confinement with adequate diet will not produce it. Freedom of movement in the daytime will not prevent rickets in a diet that is inadequate. Confinement will not prevent the cure of rickets, when the diet is good. On the other hand, complete

freedom and the possibility of constant running about will oppose to some extent the rickets-producing effect of a deficient diet. He quotes Hall, who wrote at a time when the antirachitic accessory factor was undreamt of, to the effect that as the result of an examination of schoolchildren the percentage of bad or backward teeth in rickets is much greater among the Gentiles than among the Jews. Investigation of the diet showed that the Jewish families used large quantities of oil in cooking and making bread. fish were fried in oil, potatoes were not boiled in water, but often in milk; if not, were cooked in oil; butter and oil were added to the broth; and the normal beverage was cocoa made with milk, and was drunk three times a day except on the days when meat was eaten. Jewish families consumed more eggs. Meat and vegetables were used abundantly, and they bought fish in quantity. Hall's conclusion was that the inferior physique of the Gentile families was dependent entirely upon diet. These findings at Leeds in 1902 could probably not be duplicated in any American city of to-day. None the less they teach their lesson.

Mellanby further instances as accentuating the need of a properly selected diet the studies of the people of the Island of Lewis in the Hebrides. These people live in "black houses," unlighted, unventilated, often without a chimney. In them peat fires burn constantly, smoke obtaining exit through the door. Cattle often live under the same roof, chickens are welcome guests, and the children are not taken out of these houses until they can walk, saving perhaps for a fine day in the summer. The death-rate of these infants under one year is about the lowest in the British Isles, namely, about 40 to 1000 as compared to 100 to 300 per 1000 reported in towns in spite of the efforts made to improve general hygiene. Rickets is almost unknown, and the most striking fact of the adult population is their beautiful teeth, a testimony to the absence of rickets in infancy. As to the diet, practically all of the children are breast-fed. Staple articles of diet are fish, oatmeal, and eggs. Milk is scarce, except in the summer. The infants get their milk from the best source. The liver of fish—that is the best source of the antirachitic accessory factor—is regarded as the favorite dish. It is described as being mixed with oatmeal and milk and cooked in cods' heads. The breast feeding of the children, together with high protein and antirachitic accessory factor content of the adult diet, are almost certainly responsible for the absence of rickets. Vegetables are almost unknown in the islands. Following the mortality and health history of the children after the age of one, it is noted that the death-rate is high when considered with the infant mortality. Epidemics spread rapidly and fatally; consumption in 1914 caused a death-rate of double that on the mainland. When infants arrive at the age when they can fend for themselves they develop well and become a fine stock. It becomes evident, therefore, that diet is everything to the infant under one, and as long as diet is good, bad hygienic conditions are of small significance. Further, where there is a low infant mortality there is an almost complete absence of rickets and the teeth of the people are good; also, that the production of rickets depends on a relative insufficiency in the diet of the antirachitic accessory factor, the best sources of which are fish oils, animal fats except lard, milk, and eggs.

In this relation the communication of Comrie (*Edinburgh Medical Journal*, April, 1920) is of interest, he having seen much scurvy in the Russian hospitals. Stevenson reports over 200 of these cases. The diet consisted of flour or biscuit, rice, oatmeal, peas or beans, frozen or tinned meat, or salt-herring, pork, tea, sugar, salt, preserved lime juice. Meat and vegetables were all boiled for three hours. On the average a man develops scurvy under this diet in about four and a half months. Cases were grouped and subjected to a variety of diets. That which produced the most prompt response was based on sour milk.

Morse (*Boston Medical and Surgical Journal*, April 22, 1920) gives an admirable résumé of infantile scurvy during the past two years, quoting McCollum's dictum to the effect that the disease is not due to a lack of antiscorbutic substance in the food, but to the absorption of the abnormal decomposition products of proteins, basing this belief in part on the fact that rats do not develop scurvy on a diet which does produce it in guinea-pigs. McCollum's constipation theory is vigorously assailed by a number of experimenters.

In guinea-pig work it has apparently been shown that small quantities of milk will not prevent scurvy, but that it is absolutely prevented by increasing the quantity. Hess and Unger estimate that an infant needs at least one pint daily to protect it against scurvy. Boiled milk loses some of its antiscorbutic properties. Scalded milk loses less. McCollum used artificial orange juice, which worked like a charm on guinea-pigs, and was found by Hess to be useless in both guinea-pigs and infants.

Harden and Zilva found that subcutaneous injection of lemon juice is not sufficient to cure the disease. They believe the main part, if not the entire antiscorbutic content of lemons is in the part not made up of citric and other acids. This residue is slightly acid to litmus, but can be made neutral without vitiating its potency. It can be concentrated to any desired volume, or even evaporated to dryness without losing its potency. They are able in this way to give the equivalent of from 6 to 12 lemons daily without disturbing the digestion or causing diarrhea.

Hess and Unger found that ageing and heating did not bear upon the antiscorbutic action of orange juice. They were able to extract the active factor of orange juice with alcohol and retain its power. The residue was inert. It has, moreover, been shown apparently that the neutralization of orange juice does not destroy its antiscorbutic power.

Givens and McClugage used two preparations of dried orange juice. One was dried instantaneously in the same way as milk is dried to form milk powder; the other was dried slowly for fifty hours. The first was found highly efficient, the second less so.

Hess and Unger report satisfactory results from the intravenous injection of 30 Cc. of orange juice. Lime juice is losing in favor. Hess and Unger strained canned tomatoes through a colander, warmed them, and fed them to babies through a nursing bottle, giving one ounce daily to infants a few months old. In some instances they gave as much as eight ounces daily without causing any disturbance. This practice was continued in an institution for nearly a year. It was found as effective in preventing scurvy as orange juice.

REPORTS ON THERAPEUTIC PROGRESS.

IRREGULARITIES OF THE HEART.

In the *Journal-Lancet* of April 1, 1920, HANSON reminds us that the simplest and most common type of irregularity is one present in most children and young people. It is often observed when the heart-rate slows after exercise. When the examiner feels of the pulse or listens to the heart, he will find a wave-like change in the rate, though the beats are all of the same size and intensity. Holding the breath accentuates the variation in rate, causing either increased slowing or increased rapidity for a few seconds. If the patient exercises again and the heart beats faster, it again becomes perfectly regular. This is known as a sinus irregularity, because it originates in the sinus or the normal pace-maker region, or is a vagus irregularity, because it is due to reflex stimulation of the vagus nerve. Each beat is a normal beat in every way, but the rate varies from second to second, in an orderly wave-like manner.

This type of arrhythmia is important from the standpoint of diagnosis chiefly. It is normal in young people, but may occur in an adult whose nervous system is irritable from any cause, such as drugs, toxemias, and emotions. It demands that they may be recognized clinically, and to no treatment except reassurance as to its non-importance.

A patient may tell you that his heart stops beating at times. He says, "My heart seems to be going all right, when suddenly it gives a jump in my chest and stops beating for a second." This is often described as a dropped beat, but that term is incorrect. What he really feels is a premature beat, called an *extrasystole*, and the pause which follows it. The stethoscope over the heart shows an occasional sharp, quick, small beat coming immediately after a normal beat, followed by a long pause. At the wrist the small beat is often not felt, and the pause seems still longer. The heart has a dominant rhythm, that is, a definite system of regularity which is broken by an occasional beat which comes in too early. This irregularity is shown to be due to an impulse originating in some part of the heart other than the normal pace-maker, which comes in ahead of the normal impulse and causes an early beat. The heart muscle is then not able to respond to the normal impulse when it comes and must rest till the second impulse stimulates it to action.

This type of irregularity occurs in many cases of valvular disease, in arteriosclerosis, after acute infections, after overuse of coffee or tobacco, in gastrointestinal disturbance, in the course of the administration of digitalis, and very frequently in patients in whom we can demonstrate no signs of cardiovascular disease. It simply means a point of increased irritability somewhere in the heart muscle. With this in mind, we treat the patient and the heart, ignoring the presence of extrasystoles. However, if they arise in the course of digitalis medication, we stop the digitalis. This type of irregularity is of itself not serious, and does not contraindicate an anesthetic.

Almost without exception, neither sinus irregularity nor premature contraction interferes with the satisfactory function of the heart. On the other hand, the third type to be considered, total irregularity or auricular fibrillation, usually arises, first, at a period of more or less broken compensation. It may be recognized by the complete absence of all rhythm or system of the heart-beat. The stethoscope shows that no two beats and no two intervals are alike. The jugular shows an irregular pulsation with only a single wave to each ventricular beat, although the jugulars are usually distended. This may be brought out by throwing a shadow along the course of the vein to exaggerate the waves, as Dr. A. D. Hirschfelder has shown by using a small card. The rate is usually rapid in a case when first seen with a total irregularity. Many of the beats may be ineffectual and not able to cause a pulsation at the wrist. The difference between the heart-rate and the pulse-rate is known as the pulse deficit, and occurs only in the rapid fibril-

lations, usually in hearts with distinct decompensation. However, a heart may be slow (60 or less) for years, and show no pulse deficit, but still have a complete irregularity. It is now known that the auricle in these cases is thrown into extremely rapid and wholly incoördinate twitchings. Instead of the orderly sequence of the normal beat of the auricle, followed by the beat of the ventricle, 70 to 80 times a minute, the auricle is fibrillating at the rate of 500 to 1000, and an occasional irregular auricular contraction brings on a ventricular response.

THERAPEUTIC USE OF CARBON DIOXIDE AFTER ANESTHESIA AND OPERATION.

HENDERSON, HAGGARD and COBURN, in the *Journal of the American Medical Association* of March 20, 1920, state that their observations indicate that the inhalation of carbon dioxide, properly diluted with air, is a highly beneficial and, with care, a safe treatment after anesthesia and operation.

The beneficial effects observed are: (*a*) an augmentation of breathing which rapidly ventilates the anesthetic out of the blood; (*b*) a powerful stimulant effect on the circulation, particularly on the venous return, and a rapid restoration of arterial pressure, without subsequent relapse of unfavorable consequences; (*c*) marked decrease of postoperative nausea, vomiting, and thirst; and (*d*) a possible restoration of intestinal tonus.

SODIUM CACODYLATE FOR WASTED INFANTS.

In the *American Journal of Diseases of Children* for April, 1920, CLARKE and DOW think from their clinical experience that it is possible to draw the following conclusions:

1. That carefully graduated doses of sodium cacodylate, when injected hypodermically into infants, have no toxic influence.

2. The percentage of hemoglobin in the blood is uniformly increased.

3. While the series of cases is not large, all the children showed a substantial gain in weight, and one may conclude that sodium cacodylate possesses tonic properties enabling the individual athreptic infant to take on weight, and possibly enable him to assimilate his food more properly and thus improve his nutrition.

SYPHILIS AT A VENEREAL CLINIC.

SKINNER, in the *Lancet* of March 20, 1920, in his summary states:

1. Primary cases are still in a grave minority of admission.

2. Women do not seek advice in the primary stage, and steps should be taken to disseminate knowledge of the dangers of venereal disease and the advantages of the clinics amongst the female population.

3. Continuity of treatment is essential for cure, and discontinuity a possible danger.

4. Only where treatment is commenced before the Wassermann test has become positive can a cure be definitely promised.

PYLORIC STENOSIS IN INFANTS.

GOLDBLOOM and SPENCE in the *American Journal of Diseases of Children* for April, 1920, reach these conclusions:

1. The duration of symptoms prior to operation is probably the most important single factor affecting the prognosis. When symptoms have lasted less than four weeks, the mortality is only one-third as great as when they have lasted four weeks or longer.

2. The mortality in artificially fed babies is more than three times that for the breast-fed babies.

3. In infants weighing 7 pounds or less, the mortality was three and one-half times as great as in those who weighed more than 7 pounds.

4. The mortality increases in direct proportion to the amount of weight lost previous to operation.

5. The mortality for breast-fed infants who had vomited less than four weeks and

who had lost less than 20 per cent of their best weight is almost *nil*. The fatalities which occur are due to accidents usually avoidable when the operation is done by a skilful surgeon.

CONSTIPATION DURING PREGNANCY.

DAVIS, in the *Medical Record* of April 3, 1920, calls attention to the fact that recently in abdominal surgery there has arisen a decided opinion that active purgation just before abdominal operations is a mistake. It has been observed that, when fecal masses are softened and the bowel is aroused to active peristalsis, there is more disturbance immediately after operation, and that in the event of the necessity arising for operating upon the bowel itself the chances of infection are very much increased. At present we prefer to empty the patient's bowel thoroughly several days before operation. Or if this opportunity is lacking we content ourselves by cleansing the lower bowel by gentle irrigation and avoid the depressing and irritating effects of active purgation. That the use of irritant drugs may result fatally is a fact not unfamiliar to coroners' physicians, and was strikingly illustrated in the experience of the writer when a young woman died shortly after labor from peritonitis. It was supposed that she had lost her life through puerperal septic infection, but at autopsy the pelvic organs were normal while the lymphatics of the intestines and peritoneum were in a state of acute engorgement and infection. This was found to be due to the presence of the colon bacillus, with others of less virulence, and when the history of the patient was obtained we learned that in the effort to destroy the life of the child and bring about a criminal premature labor the woman had taken large quantities of the most irritating purgatives.

The introduction of refined petroleum as a lubricant, the very common use of fruit and cereal foods during pregnancy, all tend to relieve the patient of the danger of irritation of the bowel. What, however, is especially needed to promote intestinal peristalsis in pregnancy is exercise by walking. In modern life this is becoming more and more infrequent. The appliances which women wear upon their feet are designed to prevent walking; the common use of motor cars and in cities crowded streets render walking one of the most infrequent forms of exercise. When this cannot be procured calisthenic exercises during pregnancy are of considerable value, and should these be impossible massage by skilful hands may often be employed to great advantage. Exercise, cold bathing followed by gentle rubbing, the plentiful use of fruit, water, and cereal foods, and regular and systematic attention to the matter will enable many patients to pass through pregnancy without the use of purgatives. If laxatives are necessary refined petroleum as a lubricant, with compound licorice powder, is often successful. In the presence of toxemia drugs which act vigorously upon the eliminative organs must be used, but without this indication purgation during pregnancy should be avoided.

SPINOVENTRICULAR LAVAGE IN THE TREATMENT OF MENINGITIS.

With the exception of tuberculous meningitis, it would seem that spinoventricular lavage is indicated in many types of meningitis which clinically and bacteriologically are regarded as fatal, such as suppurating traumatic meningitis when surgical interference has failed; suppurative meningitis from middle-ear processes in which the mastoid operation and spinal injections of the colloidal metals or of antistreptococcic serum are often without avail; cerebrospinal meningitis which does not respond to serotherapy; and lastly, the purulent meningitides, due to the streptococcus, pneumococcus, or Eberth's bacillus, which arise as complications of general or local injections.

The technique of the lavage consists of two steps: ventricular puncture and lumbar puncture. In infants ventricular puncture is relatively easy; the needle is inserted at the external angle of the anterior fontanel

in order to avoid the sinus which is median, and is then pushed in from above downward and from without inward. In adults puncture is to be preceded by trepanation. The opening in the skull and ventricular puncture can be made at either of two different points. Sicard, Roger, and Dambrin advise opening the cranium at about three centimeters above the middle of a line drawn from the inion to the base of the mastoid apophysis in order to reach the occipital horn of the ventricle; Bellin, Alvin, and Vernet select a point three centimeters above the external auditory canal, pushing the needle in a direction perpendicular to the surface of the side of the brain operated on because the temporal horn is only three centimeters below and easily reached by the needle. Lumbar puncture is done according to the usual technique and should be made first, thus avoiding sudden hernia of the brain, after which puncture of the ventricle is done through the opening in the skull. The needle used should be about fifteen centimeters long, and is pushed directly in to the extent of four centimeters.

The lavage is then begun, using a syringe having a capacity of 20 Cc., through either the needle in the ventricle or that in the spinal canal. A physiological salt solution or specific serum is used, the quantity varying according to circumstances from 100 to 400 Cc., and the lavage may be repeated if necessary. In meningitis with predominating cerebral symptoms, ascending lavage should be done in order to avoid diffusion of the bacteria, and inversely. One of the principal points of the technique is to inject the fluid slowly.

The results obtained so far have been rather encouraging when the types of meningitis requiring this treatment are taken into consideration, as they are always the most severe, and when we consider also the possible improvement in the technique yet to come. One serious objection to this therapeutic measure is that it would be ineffective when the case offered a walled-off collection resulting from fibrinopurulent adhesions occluding Magendie's and Luschka's trunks, resulting in a pyocephalus which cannot be reached by the solution; but some recent observers maintain that the occlusion may not be absolute and that a sufficiently thin fluid may get through. In such cases they advise an essay with ascending lavage administered with all due precaution.—*Medical Record,* April 3, 1920.

THERAPEUTIC MEASURES IN INFLUENZA.

BEAUMONT, in the London *Practitioner* for April, 1920, in his conclusions states:

1. None of the specific methods tried has proved satisfactory in every case.

2. The temperature chart does not afford a reliable criterion of the efficacy of any special form of treatment. Patients who have had no drugs, beyond aperients, will sometimes exhibit charts as striking as those seen after the administration of vaccines, salicin, or bichloride of mercury.

3. In the present state of our knowledge, symptomatic treatment alone is available.

THE USE OF VACCINES AND GLUCOSE IN THE TREATMENT OF INFLUENZA AND BRONCHO-PNEUMONIA.

KOONS, in the *Military Surgeon* for April, 1920, in a paper on this topic states:

1. That a prophylactic dose of vaccine will confer immunity for from six to eight weeks.

2. That as a remedial agent, vaccine, if given at the onset, will materially shorten and lessen the severity of the attack and pneumonia will be a rare occurrence.

3. That vaccine given to a pneumonia patient will ameliorate the severity of the symptoms, hasten crisis, and cut the number of serious sequelæ to a minimum.

4. That glucose, intravenously, combats acidosis, gives nourishment to the heart muscle, adds fluid to the body, and has a decided diuretic action.

[In his view that vaccines are useful this author differs from many other observers. —ED.]

THE GENERAL PRACTITIONER AND DISEASES OF THE EAR.

NEWHART, in the *Journal-Lancet* of April 1, 1920, asserts that in the discharge of his obligations to the public in the field of otology the medical man must help to combat certain popular fallacies regarding the ear, some of which, unfortunately, lurk as superstitions in the minds of not a few of the profession itself. We refer among other things to the prevailing attitude toward operations on the mastoid. Many lives are sacrificed annually because of a traditional, but groundless, fear as to the results of such operative procedures. The indications for operation are now so well understood that, both to avoid complications and to preserve the maximum of hearing, when once the conditions demanding operation are recognized, no time should be lost.

Experience, gained largely during the present epidemic of influenza, makes it wise to call attention at this time to the fact that it is seldom necessary to delay an indicated mastoid operation because of the presence of pulmonary, nephritic, or cardiac disturbance, making a general anesthetic unsafe. The operation is very satisfactorily performed under local anesthesia. During the past three weeks Newhart has had occasion to do the simple mastoid operation seven times under a local anesthetic, the patients being from twelve to thirty years of age. In none of these cases was there complaint of severe pain, nor was there evidence of great nervous strain.

The almost universal neglect of chronic suppuration of the middle ear may be regarded as a serious indictment of the intelligence of the physician as regards his comprehension of modern views on the surgery of the ear. It is a well-established principle that, with but few exceptions, every chronic suppurating ear which does not yield in a reasonable time to careful treatment should be given surgical care in the form of a radical or some modified form of the radical mastoid operation, but only at the hands of a skilled aural surgeon. The operation thus performed involves so little risk that this is negligible compared with the ever-present danger from endocranial complications, the certainty of a progressive loss of hearing, and the possibility of serious remote effects from the focal infection within the temporal bone.

It is well within the scope of this paper to sound a note of warning against the possibility of overlooking two very dangerous aural conditions which may escape diagnosis until autopsy. One is a chronic suppuration of the attic, which may exist with but few symptoms. The hearing is often well preserved, the discharge is usually so slight as to cause the patient no consciousness of its presence, and the only otoscopic evidence of its existence is a small defect in Shrapnell's membrane, covered with a minute quantity of pus or with an accumulation of scales of dried purulent discharge. This form of middle-ear suppuration is a frequent cause of brain abscess or meningitis. The other condition we may designate as a latent or occult mastoiditis which is prone to occur in epidemics of perforative otitis, with the pneumococcus or the streptococcus mucosus as the predominant microörganism. In such cases the middle-ear suppuration has run its course, the discharge has ceased, and the perforation is healed, but the drumhead is slow in clearing and its luster is absent. The hearing may have shown decided improvement. The patient complains of a vague discomfort in the mastoid region, possibly has a unilateral headache, and deep palpation often discloses sensitive points over the mastoid process. The *x*-ray usually gives positive evidence of disease within the bone. Such cases call for early operative interference.

It has been far from the purpose of this paper to advocate that every man in practice should qualify as a specialist in otolaryngology. It does, however, suggest the question: To what extent may the general practitioner invade the special field of the otolaryngologist? The obvious answer is that the man in general work, if he would meet the urgent needs of his practice and discharge his just obligation to the public,

must be prepared to give better service in the line of otolaryngology than in the past. His activities, however, must be strictly confined within the limits of such procedures as he is qualified safely and intelligently to perform, and should never be extended to the point of assuming responsibility beyond his skill. Moreover, the scope of his work must depend in each case upon his individual training and upon the geographical location of his practice as regards accessibility to men of more highly specialized training than he himself possesses.

CARBOHYDRATES IN THE TREATMENT OF TOXEMIAS OF EARLY PREGNANCY.

In the *Journal of the American Medical Association* of March 20, 1920, TITUS, HOFFMANN and GIVENS state in their conclusions that:

1. The problematic relationship between mild and profound toxemias of pregnancy warrants a study of the former in order to gain information regarding the latter.

2. The development of a course of treatment, the success of which seemed to depend on the use of carbohydrates in large amounts, led to the assumption that a deficiency in carbohydrates has an important bearing on the origin of toxemia of pregnancy.

3. Carbohydrate deficiency during pregnancy is of twofold origin: (1) a relative deficiency due to an unexpected demand for glycogen on the part of the fetus and the uterus; and (2) an actual deficiency, augmented in the presence of nausea and vomiting, from lessened carbohydrate intake.

4. Carbohydrate deficiency in the maternal organism causes a glycogen depletion of the liver, because this is the organ in which carbohydrates are stored for use as needed.

5. There is experimental evidence to show that liver function is impaired and the body flooded with toxins after carbohydrate starvation.

6. Pathological changes in the liver lobules which are similar to those of fatal toxemias of pregnancy can be produced experimentally by the use of certain chemical poisons. These changes can be made to disappear rapidly by the ingestion of carbohydrates.

7. Mild cases of nausea and vomiting may be controlled by so regulating the diet that there is a preponderance of carbohydrates, and an avoidance of more than short intervals of fasting by the taking of food more frequently than under ordinary circumstances. This increased carbohydrate intake should be augmented by giving the patient from 8 to 16 ounces of 10-per-cent glucose and 2-per-cent sodium bicarbonate solution daily by mouth. This may be given in 1- or 2-ounce doses.

More severe cases require more rigid attention. After an initial period of rest, gastric lavage, and the introduction of saline cathartics through the stomach tube, small amounts of liquid food are allowed alternately with from 1 to 2 ounces of the glucose and soda solution, described above, every two hours. By mouth or by bowel it should be possible to give the patient a quart of this solution daily.

In the seriously toxic patients the treatment is pushed even more vigorously with the addition of intravenous injection of from 15 to 25 gm. of glucose in from 250 to 300 Cc. of water. This is given from one to three or more times daily, according to the needs and response of the patient. The injections should be made in close accordance with the directions in the body of this paper. Other treatment is carried out along much the same lines as that for the second group.

8. Not only is intravenous injection of glucose solution a valuable therapeutic measure, but the rate of its absorption and storage by the liver is an index of liver efficiency which is of prognostic value. More rapid storage than normal is favorable because it indicates that the liver, depleted as it has been of glycogen, is nevertheless still able to restore itself. Storage which is slower than normal offers an unfavorable prognosis, since this is evidence that liver

efficiency is impaired. Their clinical evidence regarding these views is still too limited to permit a definite conclusion, but their experience thus far has been entirely confirmatory.

CLINICAL TYPES OF ILLNESS CAUSED BY EXPOSURE TO HEAT.

Willcox, in the *Lancet* of March 20, 1920, mentions: (1) Heat exhaustion (mild type); (2) gastric type; (3) choleraic or gastrointestinal type; (4) heat hyperpyrexia (sunstroke). In types 1, 2 and 3 heat hyperpyrexia may suddenly develop unless great care be taken in the removal of patients from a hot atmosphere. Types 2, 3 and 4 are all dangerous, and in them the prognosis is grave. Of 80 severe cases of effects of heat, of which he made careful notes, 13 (16.2 per cent) were of the gastric type, 9 (11.2 per cent) of the choleraic, and 58 (72.5 per cent) were hyperpyrexial.

Gastric Type.—This is one of the most interesting and treacherous forms. The patient may have a flushed face, and be restless and irritable, with marked nausea and occasional vomiting, the mouth temperature and pulse normal for several days, but the rectal temperature often rising about 2°. The liver usually shows a fatty enlargement. The knee-jerks were lost in all of nine cases in which it was specially tested. This is a valuable diagnostic sign. The knee-jerk reappears when convalescence is established, the time varying with the severity of the case. Many of these cases after four to ten days of premonitory symptoms suddenly develop a fatal heat hyperpyrexia.

Gastrointestinal Type.—In this type the onset is sudden, marked collapse occurring. The patient usually has a temperature of 101° to 103° F. Vomiting is marked and diarrhea occurs. There were cramps in the abdomen and legs in some of his cases. The face is pale, the eyes sunken, and the skin pale and clammy. The knee-jerks are generally lost; in four cases specially examined they were absent in three and diminished in one. The general appearance of the patient is similar to that of cholera. This type was of uncommon occurrence, but the mortality was high, death often supervening within three or four days.

Heat Hyperpyrexia.—The onset is often quite sudden, the patient being taken ill when on duty with a sudden high rise of temperature and loss of consciousness. In some cases the patient, when off duty, may be found by his comrades unconscious and dying. Heat hyperpyrexia frequently occurred in the very hot weather in hospital patients suffering from another disease. In them the temperature would often suddenly rise to 110°, coma and convulsions supervening.

In many cases, however, the onset is more gradual, malaise, headache, and restlessness occurring, and sometimes nausea and vomiting. Frequency of micturition is a characteristic early symptom, and is sometimes associated with urethral pain. The temperature is somewhat raised, 100° to 102° or so, and the skin is hot and dry. These preliminary symptoms usually last for a few hours, sometimes as long as forty-eight, after which mental excitement and delirium supervene and the temperature rapidly rises to about 110°. With the hyperpyrexia coma and stertorous breathing occur, the face is flushed and cyanosed, and the conjunctivæ congested. The pupils are often dilated in the early stage and contracted in the comatose condition. Fibrillary twitchings of muscles and convulsions are very common, and the breathing may be Cheyne-Stokes in character. Incontinence of urine and feces accompanies the coma. Unless the temperature is reduced by treatment death rapidly occurs from hyperpyrexia, the mode of death usually being asphyxial in type.

Marked cardiac dilatation, often associated with a systolic murmur, occurs in the severe cases. This may remain for a few weeks after the attack and needs special care. In some cases bronchitis and congestion of the bases of the lungs occur. In one case definite air-hunger was observed,

and in another a spasmodic type of breathing like that of uremic asthma. Pulmonary edema was a terminal event in the fatal cases.

On examining the urine, indican was found present in excess in all of six acute cases in which a special examination was made. Acetone and diacetic acid were found present in small amount in one out of eight acute cases specially tested. Albumin was detected in small amount in three out of eight acute cases. No casts were seen.

Of nervous symptoms, restlessness and delirium occur with the onset of hyperpyrexia, and are quickly followed by stupor and coma, with incontinence of urine and feces. Muscular twitching and convulsions are very common with the high temperature. The knee-jerk is almost always absent in the pure heat-stroke cases during the acute stage. Out of 32 cases specially tested the knee-jerk was absent in 27, diminished in two, and normal in three; in these latter cases the hyperpyrexia was probably malarial in nature. In severe cases the knee-jerk does not return for three or four weeks, in milder cases it returns earlier. The presence of knee-jerks is a valuable prognostic sign, for when they have returned there appears to be much less risk of a relapse, and the patient may then be evacuated with safety. This sign was of great practical help in deciding on the disposal of heat-stroke patients. After the acute stage in the severe cases marked mental symptoms often remain for some weeks or longer; irritability, mental confusion, and delusions are not uncommon. Usually, but not always, these symptoms clear up. Defective articulation (anarthria) occurred as an after-symptom in four of the severe cases. Nystagmus occurred in one case, and squint with diplopia in one. Multiple neuritis associated with weakness and marked wasting of the legs, the tibialis anticus muscles being most affected, occurred in two cases.

Many of the severe cases after the hyperpyrexia has subsided showed a pyrexia, the temperature remaining for several days about 102° or 103°. In one case the fever lasted three weeks. Numerous blood cultures were made on these pyrexial cases with negative results. Recurrences of hyperpyrexia are very likely to occur after a heat-stroke attack unless the patient is kept in a cool atmosphere, but this is often impossible.

The treatment is: For the gastric type of case removal to a cool atmosphere, bicarbonate of soda in frequent full doses by the mouth, and free purgation.

The choleraic type of cases is treated on similar lines to cholera.

Heat hyperpyrexia demands treatment with sprays of ice-cold water and fans, quinine bihydrochloride being given intravenously or intramuscularly if there is the slightest suspicion of malaria. Convulsions are treated by venesection, or morphine or chloroform inhalations.

Leonard Hill, in speaking upon the physiological aspect of this topic, said that heat-stroke is due to rise of body temperature to a height incompatible with life. The ultra-microscope shows the aggregation of particles in cell protoplasm increasing with the temperature. The heat-regulating mechanism may fail to control the body temperature under the atmospheric conditions or become exhausted. Sunstroke is a form of heat-stroke, the absorption of the sun's energy by clothes or dry skin helping greatly to heat the body. The wet skin keeps off sun-heat, this being dissipated by reflection and evaporation. The sun tempered by a cooling breeze burns the untanned skin, but cannot cause sunstroke. Men should become tanned so that they can wear thin cotton clothes open at neck, arm, and knee. Diet is of importance in the tropics, proteins with high heating power requiring to be reduced; temperance is essential, for alcohol, while supplying fuel value, cannot supply the essential protein-building stores and vitamines. Monkeys fed on bananas and rice and given plenty of water can be trained to withstand exposure to the tropical sun. The sweating mechanism becomes developed with training.

The effect of enclosure by clothes and walls, the speaker said, is very important. Air kept in contact with the body becomes warmed and saturated at skin temperature and heat loss becomes impossible. Rise of body temperature accelerates heat production, and a vicious circle results. The victims of the Black Hole died of heat-stroke. The body, weighing 70 kg., took some time to heat up, hence people withstood a hot bath or overcrowding in hot rooms for a time. Overheating the body increased the pulse-rate, lowered the systolic pressure, and lessened the power to compensate for the influence of gravity on the circulation. Those with circulatory defect or instability suffered first.

Wind greatly increases the convective cooling power of air when the dry bulb is less than body temperature, and the convective warming power of air when the dry bulb is above body temperature. Wind greatly increases the evaporative cooling power of air so long as the dew-point is below body temperature. The kata-thermometer illustrates these facts. It is essential that a comfortable, cooling, and evaporative power should be secured in all workshops so as to prevent both overcooling and heat stagnation and increase efficiency, which is particularly lowered by the latter. To cite an example, with dry bulb at 89° and wet bulb at 73° F., conditions are intolerable in still air, but comfortable in air moving at 1 meter per second. Suppose the air were saturated and the wet bulb were also 89° (not uncommon in Borneo), a wind of 9 meters per second (20 miles an hour) is required to give a comfortable cooling effect. Hence the enormous importance of fans and punkahs, of houses built in the tropics so as to keep off sun-heat and allow every breeze to blow through, of clothes thin, loose, and with wide openings for ventilation. Compressed air escapes cool and dry, and might be used as a cooling douche in conditions where wind does not suffice—*e.g.*, in mines, where the wet bulb approximates to body temperature. Freezing appliances can be of little value for tropical houses; they are costly and unhealthy. A dry, hot wind, such as the simoon, might overcome the cooling power of the sweating mechanism. The wet skin reflects and evaporates off the sun-rays. The clothes and dry skin absorb them, and black clothes much more than white. The pigment of the colored races, by absorbing the sun-rays, prevents sunburn and activates the sweating mechanism. It allows the skin to be thin and the blood-vessels superficial, so that those parts in the shade cool readily. Heat-stroke is not an infectious disease; it can be produced in normal people by the exact conditions of the experimental chamber. It can be prevented by treatment based on the physical laws of cooling. The critical temperature demanding immediate relief seems to be 107° to 108° F.

In moist still heat the cooling mechanism of the body fails in spite of being fully at work; as treatment a cooler environment must be secured. In dry heat the sweating mechanism becomes exhausted; a dry skin precedes and is the signal of impending heat-stroke. Hearne at Basra found that the patients with dry skin asked for the roof fans to be turned off. They were heated up just as the dry kata-thermometer was heated up by the wind, the temperature (dry bulb) being above body temperature. The sweating patients begged for the fans to be kept on; they were cooled as the wet kata-thermometer was cooled by the warm wind. After realizing the danger of the dry skin he stopped all further cases of heat-stroke by water sprays and fans. The great point is to recognize the danger of the dry skin and to get the case under treatment before the temperature rises to a critical height. No other treatment by the spray and fan is required. Infection, constipation, fatigue, and drink, by weakening the heat-regulating mechanism, contribute to heat-stroke. Cramer has pointed out that both infection and exposure to a hot atmosphere cause hyperaction, followed by exhaustion, of the adrenals. Injection of tetrahydronaphthylamin produces pyrexia, with increased action of the adrenal glands, conversion of glycogen into

sugar, etc. Cramer found that narcotics such as chloral counteract this experimental heat-stroke. It is obvious that narcotics cannot control heat-stroke in a man who has ceased to sweat and is in an atmosphere warmer than his body. The kata-thermometer indicates conditions of the atmosphere which are likely to cause heat-stroke. The surface temperature of a piece of black fur indicates the radiant energy of the sun.

DISEASES OF THE STOMACH.

In the London *Practitioner* for April, 1920, HOLDER calls attention to the fact that dilatation of the stomach is not in itself an indication for gastroenterostomy. The indication for this procedure in a case of dilated stomach is pyloric obstruction, and in proportion to the degree of this defect which is present in any particular case will benefit follow the operation. If the case is one of primary "atonic" dilatation with ptosis, the result of short-circuiting the pylorus is nearly always disappointing, and not infrequently harmful.

Pain is sometimes the sole symptom in a case of duodenal ulcer, and yet, if the pain has certain characters, a diagnosis may be made with considerable confidence. Much more hesitation is called for in the diagnosis of cholecystitis in similar circumstances. In appendicitis, it is doubtful if a diagnosis based upon pain alone is ever justified.

Cardiopasm occurs under three different conditions: (1) in association with gastric "hyperacidity" and flatulence; (2) as a neurosis; and (3) in association with cancer of the cardiac end of the stomach. The first is quite common; a point of importance in connection with it is that, if the pain is severe, whch it not seldom is, and if the symptoms referable to the stomach are not very apparent, which they may not be, the source of the pain may be considered to be the aorta, and the pain may be thought to be anginal in character. The second condition occurs in women, usually about middle age; it leads eventually to loss of flesh, even to emaciation, and to dilatation of the esophagus; the patient often finds that she can swallow her food with relative comfort if she takes her meals alone. In the third condition the pain is usually much less severe than in the second and first, and its occurrence is less erratic.

Peptic ulcer is not cured by an operation performed to short-circuit it, and the surgeon who allows his patient to think so is either careless of the latter's welfare in the future, or learns nothing from experience. A short-circuit drains the stomach, allows physiological rest to the organ, facilitates healing of the ulcerated surface, and enables the patient to get much better results from appropriate changes in her diet and habits than she can without these helps. The operation should be regarded as being the first step in treatment and not the last.

Anorexia is an important, and often a very early, symptom in cancer of the stomach. It is also an important symptom in the differential diagnosis of this disease from simple ulcer, in which disease, though the appetite is often capricious (and sometimes excessive), it is rarely absent.

A helpful point in the differential diagnosis of simple as against malignant pyloric obstruction is the condition of the blood; in simple obstruction, whatever the degree of emaciation—and this may be considerable—either anemia does not occur or if present it is of slight degree, whereas in obstruction due to cancer anemia is almost invariable and may be very marked.

It is commonly taught that cancer of the stomach is usually preceded by such predisposing causes as gastritis, simple ulcer, etc., and that cancer of the colon is preceded by constipation. The doctrine would seem to be based upon pure supposition; for though it is certain that, in a few cases, carcinoma supervenes upon chronic gastric ulcer, it happens much more frequently that the subjects of cancer of the stomach have been free from all forms of dyspepsia until the time the growth develops. The disease comes, as it were, "out of the blue." Similarly with cancer of the colon; more often than not the patient's first experience

of troublesome constipation synchronizes with the development of the carcinoma. Moreover, both gastric dyspepsia and (especially) constipation are more common in females than in males, whereas the reverse is the case with cancer of the stomach and with cancer of the colon.

Cancer of the stomach developing in a woman who is the subject of decided gastroptosis may yield a tumor which is felt in the neighborhood of the umbilicus, or even well below it. In these circumstances, despite the apparently bad prognosis indicated by the presence of a tumor, and by its size, an exploratory laparotomy should be undertaken, because this position of the growth is relatively favorable for complete removal. Such cases provide some of the few radical cures that have followed surgical treatment in the disease.

The only hope of radical cure in cancer of the stomach is afforded by very early diagnosis. On no account should the observer wait for the development of a tumor. If a case of gastric dyspepsia, on all the evidence available, is considered to be probably of this nature, and if the patient continues to lose weight after fourteen days of observation in bed with careful feeding, it is a sound proceeding to explore the stomach with a view to excision of the growth.

SYRINGING EARS.

LAYTON, in the London *Practitioner* for April, 1920, states one type of ear which is most difficult to get clean is that with soft wax present in quantities not large enough to obstruct the lumen but sufficient to narrow it and to stick to the end of the speculum as it is inserted. With this is débris of moist epithelium softened and half-liquefied, so that it looks like pus, with which it may be mixed. Syringing with water leaves some sticking to the fine hairs at the opening of the auditory meatus, and the view remains obstructed. Such ears can best be cleaned by using a mop of wool soaked in liquid paraffin, which is a solvent of fat. This removes the epithelial débris and inspissated pus, and brushes down the small hairs so that they lie flat. It may be used, too, for ears full of sand and dust when these are causing a dermatitis. He first used petrol for this purpose, and for long it worked well, but one day it seemed to hurt a small girl on whom it had been tried. He had his own ear filled with petrol, and after emptying it was able to confirm the statement of the girl. A delightful coolness was followed by a pleasing sensation of warmth, and this by a burning which went on to a fiery heat, so that for half an hour he was walking about in agony unable to control the pain, to think, or to pay attention to any other subject. The pain appears to come when the drumhead is touched with the fluid, and it is suggested that the rapid evaporation of the petrol causes a freezing of the drumhead followed by a rapid thawing. This is not likely to occur with the liquid paraffin, which does not evaporate so rapidly.

The cleaning of ears is harder in children, and most difficult of all in that case in which it is most important, namely, the child with earache. To puncture the drum at the right moment may save the mastoid from becoming inflamed; to decide as to puncture, the meatus must be cleansed. The utmost gentleness is needed in every manipulation; perhaps a little wax can be removed with the syringe, a little more with forceps, some with the paraffin mop, and the last will come away with a further use of the syringe. One rule can be laid down, that of patience and gentleness.

To complete the description, he touches on the vestibular caloric test. This depends upon the fact that a current of the endolymph is set up by syringing the ear with water at a temperature different from that of the body. When such a current is set up there results a complex of symptoms known as giddiness or labyrinthine vertigo. One of these symptoms is nystagmus. When cold water is used, the nystagmus is set up away from the ear which is being syringed; in that case the vestibular nerve is not destroyed. The syringing must be done very gently, the object being merely

to place the water in contact with the drumhead, so there is no need for more than a trickle. The water must not differ much from the body temperature; if it does, the unpleasant symptoms of giddiness, nausea, and sensations of objects turning will arise and cause the patient unnecessary discomfort.

THE TREATMENT OF EXPERIMENTAL MENINGITIS.

In the *Journal of Infectious Diseases* for April, 1920, KOHNER and IDZUMI report a research on this subject and reach these conclusions:

The subthecal injection of single doses of ethylhydrocuprein in amounts of 0.5 Cc. of 1:500 and 1:1000 solutions per kilo of body weight had a distinct beneficial effect on the course of experimental meningitis in rabbits produced by a type 1 pneumococcus of moderate virulence, when administered not later than four to six hours after the injection of organisms; when given twenty-four hours after the pneumococci this effect was not apparent. With a meningitis produced by a more virulent culture of type 2 pneumococci, single doses of this drug had but slight or no effect on the duration of the lives of the experimental animals.

In experiments consisting in the repeated subthecal injection of smaller doses of pneumococci followed in a few hours by ethylhydrocuprein, the protective and curative effects of the drug were more apparent.

Mixtures of specific antipneumococcus serum and ethylhydrocuprein did not yield results in the treatment of experimental meningitis produced by type 1 pneumococci superior to those observed with the drug alone; the serum alone was without appreciable effect on the course of the experimental lesions.

Exposure of virulent pneumococci to solutions of sodium oleate *in vitro* increased their susceptibility to the germicidal activity of ethylhydrocuprein, but the subthecal injection of mixtures of sodium oleate and ethylhydrocuprein did not yield results in the treatment of experimental pneumococcus meningitis superior to those observed with ethylhydrocuprein.

The subthecal injection of single doses of mercurophen in amounts as large as 0.5 Cc. of 1:1000 solution per kilo of body weight was without appreciable effect on the course of experimental meningitis.

The repeated injection of smaller doses of type 1 pneumococci of moderate virulence, followed in a few hours by the subthecal injection of smaller doses of mercurophen, resulted in prolonging the lives of some of the experimental animals.

In the treatment of pneumococcus meningitis of persons it is recommended that spinal puncture be made once or twice every day during the acme of the infection with the withdrawal of spinal fluid, followed by the injection of a sterile and warm solution of ethylhydrocuprein hydrochloride in physiologic salt solution in a dose of 0.5 Cc. of 1:1000 per kilo of body weight; in cases of meningitis following infection of the mastoid cells and accessory nasal sinuses, local drainage should be instituted by surgical measures.

[The destructive effect of ethylcuprein hydrochloride upon the optic nerve should be considered when this treatment is attempted in human beings.—ED.]

TREATMENT OF CARBUNCLES AND BOILS, ETC., BY LARGE DOSES OF DILUTE SULPHURIC ACID.

REYNOLDS, in a letter to the editor of the *Lancet* of March 13, 1920, states that on March 15, 1915, he called attention in the *Lancet* to the great success of the dilute sulphuric acid treatment in the above-mentioned conditions and staphylococcic infection generally. Since the date mentioned he has had some very severe cases to deal with, which have resisted all ordinary remedies, including injections with vaccines, but have yielded completely to the sulphuric acid treatment.

He had a most inveterate case of acne sent to him of twenty years' standing, which had been treated by all the ordinary means, and for the last few years by repeated

injections of vaccines, without any benefit. He put this patient at once on 30-minim doses of dilute sulphuric acid (made by adding 3 fluidounces of the strong acid to 29 fluidounces of water), and the result has been a complete cure in three weeks. This particular patient was covered over the whole body from head to foot with pustules, and was a splendid example of the power of this simple remedy when given internally and in sufficient doses (*i.e.*, 20 to 30 minims) of the right strength.

As he said in his former communication, smaller doses of a weaker strength of the acid are of no use whatever. The 30-minim dose, diluted with a wineglassful of water, is, in his experience of over forty years, always well tolerated, and has without exception always proved successful. His son, Dr. Russell J. Reynolds, who has returned from active service in India, tells him it is being used by some of the medical officers there with the best results. He feels that in all cases of suppuration it should at least be tried. His reason for writing again on this subject is that this mode of treatment does not seem even now to be sufficiently well known.

INTESTINAL TUBE TREATMENT FOR HOOKWORM.

In the *American Journal of the Medical Sciences* for April, 1920, KANTOR reaches these conclusions:

1. An individual from a hookworm district should not be pronounced hookworm-free until a series of at least five negative stools has been obtained, and then only if the last treatment took place six weeks or more previously.

2. The "latent period" after treatment—*i.e.*, the period in which the egg-laying function of the hookworm is depressed by the vermifuge so that the persistence of worms cannot be revealed by stool examination—may extend up to six weeks. However, the great majority (98 per cent) of cases become positive again within four weeks after treatment.

3. The usual form of treating ankylostomiasis with drugs given by mouth has been shown to be unsatisfactory, even relatively mild infections resisting as many as seven or eight treatments.

4. Much more efficient results can be obtained by the method of intraintestinal tube treatment, owing to the fact that the full, concentrated dose of vermifuge is delivered precisely at the point of infection. Instead of 34 per cent of cures, as in the case of a first mouth treatment, fully 80 per cent are cured by a first tube treatment. Only one repetition is necessary for the relief of the great majority of infections.

DENTISTRY, TONSILLECTOMY, AND RHEUMATISM.

LAMBERT in the *Journal of the American Medical Association* has studied the statistics of Bellevue Hospital, New York, as to rheumatism. His figures were obtained in gathering material for a report on health insurance to see whether or not there had been an actual diminution in the number of cases of acute rheumatic fever admitted to Bellevue Hospital, and to see whether any deductions could be drawn from them regarding the wisdom of including dental hygiene in the preventive measures of social insurance. They are too limited for any sweeping generalizations. But it would seem that the actual and striking diminution of total admissions for rheumatic fever of the past two years was more than accidental, and that for this the dental hygiene more than any other one factor was responsible.

That tonsillectomy has also made its impression is most probable, as the diminution of both total number of admissions in the 20- to 29-year group and the percentage ratio to total number of this group is really most striking, especially since during this period of life the liability to rheumatic infection is especially noticeable. The average number admitted of 20 to 29 years of age during the four-year period 1911 to

1914 was 180, while during the five-year period 1915 to 1919 it was 110. The ratio to total admissions has also fallen from 17.8 per cent for 1911 to 1914 to 15.3 per cent for 1915 to 1919. The two periods from 20 to 29 are the periods in which the figures show most definitely an average reduction of percentage to total, combined with a definite reduction of total admissions.

Have tonsillectomies begun to tell, or has it been oral and dental hygiene? Undoubtedly both, as ten years have not elapsed since tonsillectomy before 15 years of age has become wide-spread, so that it could not previously have affected the older years of this and other age groups in the community.

APOTHESINE.

SUTTON in the *Ohio State Medical Journal* for April, 1920, writes in an interesting way of his use of apothesine. He states that only within the last few years has sufficient interest been taken in the problem of developing a new and thoroughly satisfactory local anesthetic of American manufacture to lead to the production of a substance that could be confidently used, wherever any of the popular local anesthetics of foreign origin had heretofore been the subject of critical investigation in obtaining thoroughly satisfactory results. This product of American research and manufacture, known as apothesine, has been the subject of critical investigation in all manner of clinical tests and has demonstrated its excellent anesthetic activity as well as freedom from toxic or systemic effects.

Apothesine is a hydrochloride of gamma-diethyl-amino-propyl cinnamate. It differs from novocaine in that instead of being essentially an ethyl ester of benzoic acid, it is a propyl ester of cinnamic acid. It occurs as small white crystals having a melting point of 137° C. It is readily soluble in alcohol, partly soluble in acetone and ether, and very soluble in water. It is quite stable, and will keep indefinitely if reasonably protected from contamination. The solution in water is neutral to litmus. It is precipitated from solution by contact with alkalies and the ordinary alkaloidal reagents. The solution may be sterilized in the usual manner, by heating to the boiling point of water.

Sutton operated on a man sixty years old for strangulated femoral hernia. The man had a very weak heart and had to travel fifty-five miles over a narrow-gauge railroad. The doctor was in great fear that he might not live until he reached the hospital. The operation was successful and the patient made a prompt and complete recovery.

Sutton has operated on hemorrhoidal cases by the dozen (using clamp and cautery), not excepting the aggravated cases with prolapse of the rectum where a large portion of bowel had to be removed. He says he can stretch the sphincters to any degree without the slightest pain or discomfort. Suprapubic cystotomy is especially easy to do with local anesthesia. He has done it at least a half-dozen times. It is so easy and satisfactory that it is a shame to take the money for doing it.

Resection of the ribs for empyema can be satisfactorily executed with local anesthesia. In most of those cases any other anesthetic is a menace to life, especially ether, for it invariably starts a fit of coughing which is always alarming. He has done only two or three cases with local anesthesia. He has also opened the neck down to the deep fascia where there was an extensive infection extending from the mastoid down to the sternum, the infection being produced by mastoid disease. The patient did well.

He did a tonsillectomy on a young girl just to try out the apothesine. He injected the solution freely under both tonsils and was amazed at the manner in which it bulged the tonsils out into the pharynx. He picked one of them out in a jiffy and was chuckling with delight, when she closed her mouth and refused to open it

again for the removal of the other tonsil. So for the first and only time in which he has started out to operate with a local anesthetic, he was obliged to give ether to get the other tonsil. She said afterward she suffered no pain but was frightened.

Two years ago when the writer was unable to obtain novocaine, his attention was called to apothesine with adrenalin, and since then he has used it exclusively and considers it an ideal local anesthetic.

It is a matter of pride that it is absolutely an American product in every sense of the word. His first major operation with apothesine was on a man thirty years of age, a patient of Dr. A. R. Cain of Cambridge, Ohio. He refused to take ether. The operation was entirely satisfactory to all concerned, and when the operation was completed the patient insisted upon getting off the table and into bed without assistance, which privilege was granted him.

For any kind of a major operation he has the nurse make up two ounces of three-per-cent solution of apothesine with adrenalin, and gives in some cases a hypodermic of atropine 1/150 grain, morphine ¼ to ½ grain, varying the dose to suit the needs of each patient, one-half hour before the hour set for the operation. He injects the skin for the length of the incision. Then he goes an inch on either side of the line of the incision; injecting the skin, always until the white line shows. Then he feels his way with a long needle into the deeper tissues, injecting under the line of the incision; then on either side for an inch or perhaps slightly more. He then waits ten minutes by the clock before making an incision, and he never has to use any more of the anesthesia until he has reached the objective, be it the appendix, the gall-bladder, the urinary bladder, or what not. Always using a small, short needle to start the skin and usually the short needle on the objective organ to be operated on. It is only necessary to bleb the peritoneum and mesocolon to painlessly attack the appendix.

In hernias he injects the neck of the sac. After injecting peritoneal or mucous surfaces he immediately goes ahead with the operative procedure. The bowels may be handled gently without pain even when inflamed, if one is careful not to make traction on them. He has never observed any pain from sewing up the wound either in skin or deeper tissues.

Sutton adds these words: "It seems to me that apothesine and novocaine have reached the ideal for local anesthesia. I have done about an equal number of cases with each one, but I am inclined to give preference to apothesine. I have never seen any untoward effects from either, however."

SEX DISPROPORTION AND ITS REMEDY.

The occurrence of males and females of the human species in almost exactly equal proportions, whether the white, yellow, or black varieties be considered, is a natural phenomenon of considerable significance. The disturbance of this normal ratio by such accidents as warfare and emigration is well recognized by sociologists as a factor of serious importance. The last annual report of the Friends Association for the Promotion of Social Purity, for example, is constrained to admit the influence of war losses, even while it points out that the disproportion will be considerably less in five years' time. There can be no doubt that an excess of women in the population conduces to irregular living, with its attendant diseases amongst those of a low moral standard. Others whose lives are regulated by the ideals taught in Christian countries may be expected to suffer physically through the inevitable conflict between their sense of right and their unsatisfied sex instinct. Especially is this true, as has been shown by Professor Jung, in a civilized community where other fundamental instincts like that of self-preservation find no outlet for their affective energy.

There is, however, another way of looking at this question. In those countries where a diminishing population is a source of grave anxiety to their most patriotic citizens the loss of thousands of potential fathers is a most serious aspect of the post-war sex ratio. Dr. Paul Carnot estimates that this loss will result in the sterility of two million women in France, and supposing that each of these women might have borne three children, he calculates that the State will lose six million citizens in this generation. France, he says, cannot afford such a depletion, and he puts forward certain tentative suggestions for repairing the gap. One suggestion—less radical than others—is that facilities should be offered to foreigners enabling them to assume French nationality when they are married to French citizens. Many soldiers from all parts of the world have claimed French brides in the last few years, but it is doubtful if any large proportion will wish to establish their home on foreign soil, and Dr. Carnot is not satisfied that such a change in French law will suffice. He is prepared to go much farther.

"No convention, moral or social," he says, "seems to us sufficiently rigid to deprive impoverished France of six million births." The real solution must be sought through some method of making motherhood a remunerative career. The state is to replace the absent "head of the family" and to bear all the expenses incidental to the birth and upbringing of a contingent of young subjects. A bonus will be paid on "products of good physical quality."

We remember the horror which was aroused in this country by the unfounded rumor that Russian women had been "nationalized," and we cannot think that Dr. Carnot's scheme will readily commend itself either here or in France. Fatherhood is nearly as essential as motherhood to the growing child, and we had almost rather consent to polygamy than to sociogamy. The real situation seems to be that society must discover some means of maintaining its sex proportion in the natural ratio of one to one. If war cannot be eliminated, then women might be enlisted on the same terms as men; and, in the meantime, while so many children are in need of food, a great increase in the birth-rate will have its drawbacks.—*London Lancet,* April 3, 1920.

LUNG ABSCESS AFTER TONSILLECTOMY.

CLENDENING in an article in the *Journal of the American Medical Association* of April 3, 1920, reaches the following conclusions:

1. Lung abscess is at present a frequent sequel to tonsillectomy.

2. It occurs in all classes of cases—in private as well as in free services.

3. It is sometimes fatal, always serious, and often very crippling.

4. It is due in some cases to inspiration of infected material.

5. Motor-driven anesthesia apparatus, by creating a positive pressure in the pharynx, may operate as a cause. At any rate the danger is sufficiently great to justify the discontinuance of their employment until comparative data can be secured.

6. It is due in some instances to metastatic infection through the lymphatics.

7. Swabbing or tampering with the throat after enucleation has been accomplished is the cause of one group of cases.

HYPERCHLORHYDRIA.

In the *New York Medical Journal* of April 10, 1920, ROSE gives the following advice:

The use of vinegar, lemon, and all acids should be prohibited. This includes crabapples, cranberries, sour grapes, apples, grapefruit, pineapple, and many other fruits. In the beginning of the treatment it is better to stop fruit altogether, and later to allow one article at a time as they are found to agree. Spices and hot seasonings must be omitted from the food. No mustard, pepper, tabasco, or hot sauce can be taken. Onions and garlic should be

avoided both as food and as flavoring. Radishes, cucumbers, lemon or pineapple ice, gingerbread, and highly seasoned turkey dressing are forbidden foods. Rich gravies, peptonoids, and beef juice are stimulating.

Coffee is a gastric irritant. Some patients having accustomed themselves to its use may drink a large quantity without feeling ill effects. To the majority of patients, however, an excessive amount is irritating, while others are injured by coffee even when taken in moderation. Sufferers from hyperchlorhydria should abstain from its use. Concentrated sugar solutions, such as oversweetened articles, including candy, cakes, and sweet desserts, are bad. Though many dishes may disagree a great variety of food is admissible. In fact the great majority of foods are desirable if prepared without the addition of acids, pepper, hot seasonings, onions, garlic, mint, or excessive salt or sugar. The following are the foods which diminish secretion, combine with large amounts of hydrochloric acid, or are non-irritating and should therefore be chosen to make up the diet. We desire that diet which combines with the greatest amount of hydrochloric acid and is at the same time the least irritating to the mucous membrane.

Fats not only diminish secretion but are non-irritating, and in the absence of hepatointestinal toxemia may be given freely. They also exert a salutary effect upon the constipation which exists in one-third of the cases. Olive oil, cream, and unsalted butter may be used with benefit. The oil when given shortly before meals supplies valuable nutrition, is soothing to the mucous membrane, and lessens the pain. Crisp bacon is advisable.

Concentrated forms of carbohydrates are best. Potatoes, mashed or baked, bread twice baked and therefore partly dextrinized should be used. Finely divided cereals, as cream of wheat, farina, rice, and well-cooked hominy, agree, and dry cereals are well taken. These are good with cream or butter and sugar. Asparagus, peas and spinach strained and eaten in the form of purées are more likely to agree than coarse vegetables in severe cases. In mild cases all green vegetables which are not pungent, provided they are not seasoned with anything prohibited, are well taken, such as string-beans, romaine, carrots, parsnips, lettuce, celery, lima beans, and squash.

Milk, eggs, white meat of chicken, fish, well-cooked lamb, veal, mutton and beef are useful foods. Avoid all rich gravies. Swiss, cream, American, Camembert and Cheddar cheese are good if they agree, owing to their power of combining with hydrochloric acid.

Milk, cocoa, weak tea, water and the alkaline mineral waters such as apollinaris, Vichy and seltzer agree. (The carbonic acid often has a sedative effect.)

SAMPLE DIET.

Breakfast.—Cereal, soft-cooked egg, toast, whole-wheat bread or breakfast biscuit, and weak tea.

Lunch.—Toast, butter, white meat of chicken or cold roast beef, boiled rice, and custard.

Dinner.—Fish or well-cooked lamb or mutton, purée of spinach, string-beans, mashed potatoes, zwieback, milk with lime water if necessary, baked apple or rice pudding.

When the distress is regular and annoying before the midday meal it is best to give milk or matzoon, toast, or a roast beef sandwich or egg at 10:30 A.M., 4:30 P.M., and before retiring. Avoidance of worry at meal-time, the dismissal of business or professional cares and thorough mastication are essential. After improvement reduce the amount of protein so that it is not excessive.

MEDICINAL TREATMENT.

Drugs are used to counteract the effect of acidity by neutralizing the hydrochloric acid and by soothing the mucous membrane and relieving constipation. Thus they diminish secretion and lessen the sensitiveness of the mucous membrane. Alkalies

combine with the excessive hydrochloric acid and afford immediate relief from heartburn, pain, headache, and other symptoms. If they are employed in sufficient doses for several weeks permanent relief is obtained in uncomplicated cases. Magnesia usta neutralizes twice its weight of hydrochloric acid and is four times as efficacious as sodium bicarbonate. Because the former is laxative and the latter is not these two drugs may be used in varying proportions according to the requirements of the individual case. Bismuth subcarbonate is very soothing and useful to combine with magnesia when a change from soda is desired for less constipated patients.

The following is a good prescription for average use:

Magnesia usta,
Soda bicarb., ää ½ ounce.

M. et sig.: One-quarter to one teaspoonful one-half to one hour p. c.

When the free hydrochloric acid is forty to sixty or more these remedies may be given six or more times daily. Doses of the alkalies should precede the times when symptoms occur by fifteen to thirty minutes. It is important to give sufficient medicine to relieve symptoms thoroughly at first and decrease the dose from time to time, but not too rapidly. If constipation is more marked than acidity, pulverized rhubarb may be combined with the alkalies. If constipation is a probable cause it should be dealt with accordingly. Extract of belladonna leaves, one-thirty-second to one-eighth grain, may be employed to decrease secretion. It may be used alone or combined with alkalies.

Silver nitrate may be used in doses of from an eighth to a half-grain in a glass of water half an hour before eating, so as to reach the mucous membrane when the stomach is empty. It may also be used as a wash in one to twenty thousand down to one to ten thousand solution, but this is seldom necessary, it being more often resorted to in cases of acid gastritis. Silver tends to reduce secretion and the sensitive condition of the stomach. Pain may occasionally be severe enough to require codeine. Frankly nervous patients are benefited by the following prescription:

Soda bromide, ½ ounce.
Glycerin, 3 drachms.
Distilled water, 3 ounces.

M. et sig.: One teaspoonful in water before meals.

Detailed inquiry into the habits of the patient and the food eaten for breakfast, dinner and supper requires considerable time and patience, but will often elicit information as to faulty habits of life or of eating, without which successful management of these cases is impossible, and with which it becomes easy.

[As silver nitrate is immediately altered by contact with milk it is difficult to see how such doses can do good.—ED.]

TREATMENT OF HYPERTENSION.

In the *American Journal of the Medical Sciences* for April, 1920, MOSCHCOWITZ tells us that the main desideratum in the treatment of hypertension is the maintenance of the best possible circulatory function; in other words, to try, if possible, to place the circulatory function in the condition of so-called "compensation." Attempts to reduce the blood-pressure by direct methods have proved to be futile. We have drugs that reduce blood-pressure, but their effect is evanescent and no permanent gain is ever derived. With the aid of rest and diet, either alone or with the aid of drugs, we do effect lasting decreases in blood-pressure, but these are entirely secondary. It is entirely possible to bring about vast subjective and objective improvement without appreciable effects upon the blood-pressure, nor is this improvement always proportional to the decreases in pressure. As in valvular and muscular defects of the heart the main drug upon which he relies to maintain a correct circulatory balance is digitalis. For many years digitalis was contraindicated in hypertension, because it was supposed to increase blood-pressure, by increasing the

power of the muscle and contracting the peripheral blood-vessels. It was therefore considered *the* heart stimulant *par excellence*. We know that digitalis in the normal heart at all events never directly increases the blood-pressure, except in doses that are far beyond the therapeutic maximum.

In recent years the opinion is gaining ground that the main effect of digitalis is expended in affecting the rhythm of the heart. It affects irregular hearts more than the regular; it makes irregular hearts regular and it slows regular hearts to a limited extent. In irregular hearts, as in auricular fibrillation, digitalis, it is true, increases the blood-pressure, but the effect is entirely secondary and conditional upon the improvement in the rhythm. It would lead him too far to discuss the therapeutic indications of digitalis in general, but his conception of digitalis is that of a regulator and not that of a "stimulant." It may be aptly likened to the timer of an automobile engine.

With the clearer understanding of the effects of digitalis our timidity as regards its employment in hypertension has completely disappeared. Its indications in decompensated states of hypertension with the signs and symptoms already outlined are obvious. In such instances the heart is rapid and usually irregular and the effect, except in cases where the decompensation has gone too far and the reserve force of the heart has been lost, is almost magical. These patients are the so-called "cardionephritides." When all signs of decompensation have disappeared, the principle consists in keeping the heart at a certain rate by the continuous use of digitalis. Each patient must be studied with this end in view, and eventually a rate will be found in which the patient's condition, both subjectively and objectively, will be at its best.

But the value of and the indications for digitalis in compensated cases of hypertension have not been generally appreciated. This is a subject worthy of extensive study. He knows of the therapeutic benefits that may be obtained, but he is not at all clear as to what physiological forces or agencies these benefits may be ascribed. A patient complains of slight shortness of breath on exertion, pains (very often anginoid) about the precordium, and headache or vertigo. An increased blood-pressure is found, a pulse only moderately rapid, between 80 and 90, and perfectly regular; the urine is lessened in amount and contains albumin and casts. Place this patient upon full doses of digitalis and the symptoms disappear, the quantity of urine increases, and the albumin decreases; the systolic pressure decreases only a few points, the diastolic pressure a little more. The pulse-rate at rest, however, comes down a varying number of points, from only 4 or 6 to perhaps 10 or 20, depending on the original rate. Now comes the interesting fact: if such a patient is kept at this rate of heart action he will remain well and all the other objective signs, such as the blood-pressure and the condition of the urine, will be found to remain constant. When the pulse at rest remains persistently above this rate the patient will invariably be found to be worse. The rate may be as low as 60 or as high as 90. Individualization of dosage is therefore a paramount necessity.

Why digitalis causes such pronounced improvement he is at a loss to explain. Whether the effect is entirely due to the slowing of the heart, enabling the organ to accumulate a greater reserve force in diastole, whether it increases the velocity of volume flow, or whether it improves the coronary circulation, he does not know. But the fact that digitalis is a "real drug" in the treatment of apparently compensated cases of hypertension, as well as those that are decompensated, is an incontrovertible fact. Its administration requires judicious study and furnishes an abundant field for clinical and experimental investigation.

Digitalis is, of course, useless in cases of hypertension, with a constantly slow pulse (around 60). But a pulse of 74 or 80 need not be considered a contraindication for its use.

The drugs of the nitrite group introduced

by Lauder Brunton unquestionably diminish blood-pressure, but the effect is transient. These drugs have, nevertheless, a definite field of usefulness, but only as symptomatic remedies.

THE USE OF GUM ACACIA IN HEMORRHAGE.

In the *Journal of Pharmacology and Experimental Therapeutics* for March, 1920, BAYLISS makes the following statements when concluding a long and exhaustive article:

A solution of gum acacia of 6 to 7 per cent in 0.9 per cent sodium chloride is capable of effectively replacing blood lost, unless the loss amounts to more than 75 per cent of the blood volume. Hence its use in hemorrhage from various causes, whether from injury, disease, or in operations.

Its effect is due to the fact that the blood-vessels are impermeable to colloids, so that their osmotic pressure is effective in retaining within the circulation the solution that has been injected, a property which salts do not possess, since the vessels are permeable to them.

It has no chemical or drug-like action and can be used in large quantities.

It can also be used with benefit when the blood volume is reduced owing to removal of a part from effective circulation by stagnation in the capillaries, as happens in wound shock, traumatic toxemia, and probably in other similar conditions. In such cases its primary object is to maintain a normal circulation until the toxic products are eliminated from the blood, while the blood out of circulation is restored to use.

When fluid has escaped from the blood, owing to the capillaries becoming permeable to colloids, as in the action of tissue toxins and so on, gum-saline restores the normal state, provided the morbid condition has not lasted too long. In this latter case even transfusion of blood is of no avail.

When the blood has become concentrated by loss of fluid from the body, gum-saline is more effective than saline alone, even if hypertonic, since it is not lost from the circulation with the rapidity that such solutions are.

It seems probable that gum-saline may be of value in other states of low blood-pressure, or decreased volume in circulation. It has been found to be so in toxic anemia, such as blackwater fever.

Neither gum nor blood has any permanent effect when the blood-vessels are deprived of control by the vasomotor centers.

Whether there are any conditions, other than that of excessive hemorrhage, in which blood is more effective than gum-saline is uncertain. Experiments on animals have not given proof of such.

Gum acacia does not produce anaphylaxis nor hemolysis. Nor does it agglutinate the blood corpuscles in man, although it does so *in vitro* in the case of some cats. This latter phenomenon does not appear to occur while the blood is in circulation, and is not followed by hemolysis, even *in vitro*.

The addition of gum acacia to fluids used for perfusion of organs is to be recommended on account of the relative absence of edema.

THE EFFECT OF MERCURY ON THE KIDNEYS AND THE DURATION OF ITS EXCRETION.

BEINHAUER, in the *American Journal of the Medical Sciences* for June, 1920, states: (1) All cases showed a positive test for mercury on the second day. (2) There was a greater excretion of the drug on the second day than on any other day. (3) The heaviest excretion of mercury was between the forty-second and the seventy-second hours. (4) Mercury was detected in some cases as early as the sixth hour and as late as the sixth day.

In addition to carrying out the method for detecting mercury in infinitesimal amounts in each urine, every specimen was carefully subjected to both chemical and microscopic tests for the presence of material that might suggest kidney changes.

In nearly all cases the urine analysis was entirely negative. In a few cases a trace of albumin and a few hyaline casts were found.

He concludes as follows:

1. The excretion of calomel in ordinary therapeutic doses begins within six to twelve hours and is continued until the sixth day, depending upon the size of the dose.

2. A small dose of the drug is excreted as rapidly as a larger dose, but over a shorter period of time.

3. In so far as could be determined by the urine analysis the drug is excreted without injurious effects upon the kidneys.

THE USE OF SILVER NITRATE IRRIGATIONS FOR THE DIAGNOSIS OF AMEBIC DYSENTERY.

THOMPSON, in the *Journal of the Royal Army Medical Corps* for May, 1920, gives the following account which may be of interest and of some use to others who have to deal with cases of chronic diarrhea, in which, although no amebic or bacillary infection can be found, the diagnosis is probably amebic dysentery.

In 1919 he had, amongst true dysentery patients, several cases in which everything pointed to the probability of amebic dysentery infection, but at no time after prolonged and repeated examinations could Entamœba histolytica be found either in the free or encysted forms. In spite of courses of treatment with emetine, ipecacuanha, bismuth, and salol, aperients and astringents, these cases did not improve, the general health remained poor, and a moderate diarrhea persisted.

Therefore, with a view to treatment in the first two or three cases, irrigations with silver nitrate were given. In each case there was a marked improvement, generally after the second or third day; the patient became free from the constant pain in the left iliac fossa, and from the constant desire for and straining at stool. But the point which was most striking, and for which these notes are given, was that the daily examination of stools showed E. histolytica to be present on the second to the sixth day after the commencement of the irrigations in each case.

Thus the diagnosis was definitely settled, and treatment could subsequently be directed in the correct channels.

He reports seven cases, of which we give herewith one of the most interesting:

Lieutenant A. had been in the hospital almost continuously from October, 1918, to May, 1919, only leaving the hospital for a few weeks. He had been placed under arrest for neglect of duty, and was suspected of "malingering" or "doping," even at the court martial. He was again sent to the hospital. He was pale and washed out, with a constantly furred tongue and foul breath. He complained of great lassitude, intermittent pain in the abdomen, particularly in the left hypochondrium, and an intermittent diarrhea with tenesmus.

For months examinations of his stools were made four times weekly with negative results.

He had altogether four courses of emetine, each course being six daily doses of 2/3 grain. He had also had a variety of other treatments without any success.

As the condition appeared to be getting worse, irrigations of silver nitrate were commenced: Silver nitrate 1 drachm in 1 ounce of water was made up with 2 pints of warm water, and given as a high irrigation, being retained for about ten minutes. The patient stated that he could feel it right up across the upper part of the abdomen. The relief was great, and the irrigations were continued daily with marked improvement in his general condition.

On examination on the third day—*i.e.*, the second motion after the first irrigation—E. histolytica were found in the stools, and thus the whole illness was shown to be due to this.

With a prolonged course of emetine, combined with an ipecacuanha mixture, a marked improvement set in. Bismuth-emetine-iodide was not available.

The next day's examination—*i.e.*, the first stool after the irrigation—showed masses of young free E. histolytica in parts of the stool and showed again toughened patches of cell débris and mucus.

In consideration of these cases it appears that high irrigation with silver nitrate does definitely help in the diagnosis of cases of chronic diarrhea or colitis which are suspected of being due to histolytica. Three of his cases had been tried previously on high irrigations with other solutions—*i.e.*, boric lotion and weak eusol solutions. They also had had enemata fairly frequently. But they still gave negative results for amebæ until the silver nitrate irrigations were tried.

From this and the presence of these toughened patches of mucus and cell débris, it appeared to him that the action of the silver nitrate was to coagulate the masses of mucus and débris which can be found covering the surface of a dysenteric ulcer, that this coagulation of each mass loosened its edges and freed it from the edge of the ulcer, and that then the whole patch could be washed off the ulcer by the liquid. Thus the actual ulcer itself is exposed and the amebæ which are present can escape or be washed into the lumen of the gut and pass into the feces during the next few days. This, of course, is mere supposition, and whether this is the mode of action or not he cannot say; but he thinks there is no doubt that in obscure chronic cases of diarrhea or colitis high irrigations with silver nitrate solution do bring to light the causative agent when this is E. histolytica.

This method appears to be particularly applicable to those cases in which there is little or no diarrhea, no present or past history of hemorrhage, and very little to go on except a constant abdominal discomfort, and pain and tenderness in one or two definite areas. In other words, the type of case which probably has one or two well-marked, fairly deep ulcers which are well covered over and which cause constant irritation and slight diarrhea, but do not discharge any amebæ into the gut, and hence to the feces.

It is in such cases that the silver nitrate appears to have its coagulating and loosening effects, and thus exposes the cause of the condition.

Thompson admits that his experience is very small, being only some two dozen cases in all. He is therefore interested in learning the experience of others who may try this method in such cases out of the large number of obscure, semichronic diarrhea cases which are constantly occurring.

THE METABOLISM AND EXCRETION OF QUININE.

The *Lancet* of May 22, 1920, in an editorial on this subject states that the British War Office has reprinted, in separate form, that portion of its recently-issued volume of "Observations on Malaria" which deals with the excretion of quinine. This subject is reported on by Nierenstein, lecturer on biochemistry in the University of Bristol, who was working during the war under Sir Ronald Ross at the malaria laboratory of the Fourth London General Hospital. Nierenstein's first task was to compare the reliability of the various tests for quinine in urine. The most delicate of the qualitative methods is, he finds, that devised in 1853 by Herapath, of Bristol, and recently elaborated by Ramsden and Lipkin, of Liverpool. A number of quantitative methods were also tested critically, and that of Barratt and Yorke was selected as being most reliable.

Using this technique, Nierenstein made 1668 estimations of the excretion of quinine, and it is on this basis that he draws his conclusions. From these it appears that only about half the quinine administered to the human subject is excreted as such in the urine. The remainder, it seems, is metabolized, and two disintegration products, quitinine and hemoquinic acid, were found in the urine. This latter was almost constantly present in the

urine of blackwater fever cases, and in much larger quantities than in the urine of ordinary malarial patients. It was found that variation in the dosage from 20 to 70 gr. daily produced little or no variation in the proportion of quinine excreted unchanged, but that a dosage of over 30 gr. per diem, which raised the unchanged quinine in the urine above 11 gr. per liter, was apt to cause albuminuria. Variations in the preparations used and in the methods of administration made no great difference to the proportion excreted unchanged.

Nierenstein's general statements are supported by a great wealth of detail in his report, which deserves close study.

RADIUM-X-RAY THERAPY OF CARCINOMA UTERI AND UTERINE BLEEDING.

BISSELL, in *Minnesota Medicine* for June, 1920, in an article on this subject concludes that combined radium and *x*-ray therapy is the treatment of choice in all cases of cancer of the cervix.

In the early cases conservative surgery followed by radiation is justifiable, but properly the latter alone will prove equally efficient.

In carcinoma of the fundus, surgical results have been so good that these cases should all be submitted to operation. As in all other cancer cases, however, the patient should be given the added benefit of postoperative radiation.

Radiation should be accepted as a specific in the menorrhagias due to myoma or fibrosis or those of unknown etiology.

ANTIPNEUMOCOCCUS SERUM (KYES'S) IN THE TREATMENT OF PNEUMONIA.

GRAY, in the *American Journal of the Medical Sciences* for June, 1920, states that the record of the use of Kyes's antipneumococcus serum at Camp Grant can now be summed up. Three hundred and twenty-two cases of pneumonia were treated between October 1, 1917, and September 20, 1918, with a death-rate of 7.7 per cent; these were cases of typical lobar pneumonia. Two hundred and thirty-four cases of epidemic pneumococcus-bronchopneumonia were treated between September 21 and November 4, 1918, with a death-rate of 16.7 per cent, which is to be compared with a death-rate of 53.6 per cent in 1684 control cases. One hundred and eighteen cases were treated between November 5, 1918, and May 1, 1919, with a death-rate of 4.3 per cent; these were atypical cases of pneumococcus pneumonia, which seemed to indicate a gradual change from the epidemic type of disease back to the type of lobar pneumonia, probably due to a falling virulence in the organism. In addition 11 cases of pneumococcus meningitis were treated, with five recoveries, one fatal case having occurred since the publication by Litchfield.

RELATIVE VALUE OF ARSPHENAMINE AND NEOARSPHENAMINE.

SMITH, in the *Journal of Laboratory and Clinical Medicine* for May, 1920, concludes with a brief discussion of the merits and demerits of each compound. For a long time arsphenamine was used dominantly, but during the war all treatment at the front, by French, English, American, and German doctors, was with injections of neoarsphenamine. This must have given better results.

Schamberg showed that neoarsphenamine is two and one-half times less toxic for white rats than the arsphenamine from which it is made. Arsphenamine was tolerated at 100 mg. per kg. body weight, while the neoarsphenamine was tolerated at 250 to 300 mg. per kg. body weight. The addition of the formaldehyde sulphoxylate group apparently lessens the affinity for the protoplasm of the parasite, but also lessens the affinity for the body proteins still more. This is due to the closing of one amino group (Schamberg).

Further, arsphenamine in practically all concentrations hemolyzes red blood cells *in*

vitro. Neoarsphenamine does not do so, in any concentration normally used (Schamberg).

The hydrogen-ion content of neoarsphenamine is close to that of the blood; that of arsphenamine, whether alkaline or acid, differs greatly from that of blood. Neoarsphenamine is usually better tolerated than arsphenamine. Milian states that neoarsphenamine never induces nitritoid crises except in extremely predisposed and intolerant persons.

Curative Powers. — Arsphenamine is more curative than the neo-compound. Schamberg found that to sterilize rats experimentally infected with Trypanosome equiperdum (horse syphilis) it took twice as much of the neo-drug as arsphenamine itself. The arsenic content of three parts of neoarsphenamine equals that of only two parts of arsphenamine.

Schamberg thus concludes that the arsphenamine is more active therapeutically, but this difference is made up by the discrepancy in tolerated dosage. Nine-tenths gm. of the neo-compound can be given three times a week. Neoarsphenamine creates much less biochemical disturbances in the blood and tissues.

The value of these drugs has been shown by the destruction of spirochetes in the test tube, and also by the fact that this power is greatly enhanced when digested with tissues—inorganic arsenic compounds are presumably formed. We might ask if these drugs will actually cure syphilis. Authorities differ, but Schamberg has presented an interesting case in support of the curability of this disease. He believes patients treated in the primitive stage intensively may be cured. In this case syphilis was acquired in 1917. The Wassermann was positive. After treatment by neoarsphenamine, the blood gave a negative Wassermann, and the eruption disappeared. In 1919 syphilis was again contracted; a chancre developed at a site different from the first one. The blood now gave a strong positive Wassermann. Schamberg believes the facts warrant the assumption that the first infection had been cured. No immunity was given against the second attack, however. Too much value should not be given to the Wassermann reaction, in deciding the question of curability.

At any rate, under such treatment, if applied early, external lesions disappear; secondary signs, as alopecia, and secondary syphilitic systemic disturbances are prevented.

Tauber crystallizes the view of writers when he states that "mercury and arsphenamine must be combined in the rational cure of syphilis."

Now that the supply is carefully controlled, and as a result of the investigations as to the cause of reactions, it is hoped that these valuable compounds will be used with better success by the average physician. It might be desirable to further modify them to form a new compound specific for the spirochete pallida. The success of these compounds, on the whole, has given new hope for the cure of all infectious diseases, by the elaboration of chemical compounds, which will combine a high parasitotropism and a low organotropism in each case.

THE VALUE OF SUGAR.

REDWAY, in the *Medical Times* for June, 1920, states that a news letter from a leading bank chides the public for thoughtlessness and carelessness in failing to cut down the consumption of sugar. It is not a case of indifference. The increased consumption of sugar is a necessity; and it has a physiological basis that may be expressed in calories. Three fuels that form a part of the human ration are in a class by themselves—starch, sugar, and alcohol. Neither substance is a food in the true sense. The value of each is measured in units of heat—that is, in calories. In the breaking up of the starch molecule sugar is formed; and in the breaking up of the sugar molecule alcohol is formed. In the destruction of the starch and the sugar several products are formed. The destruc-

tion of the alcohol molecule is merely a case of combustion, the oxidation of its atoms resulting in carbon dioxide and steam.

Of the three substances sugar is a moderately quick and alcohol a very quick fuel. The strenuous life in American cities is doubtless responsible in part, at least, for the increased consumption of both. In the past ten years the table d'hôte dinner with the accompanying portion of light wine, or of beer, increased enormously. At the close of a day of severe mind strain it brought a short period of restfulness. To a less degree sugar did the same. In 1909 the per capita consumption of sugar had increased to a little more than seventy pounds. From that time the increase was not very great during the next five years. Then it took a jump all over the United States and Europe—a result of the war. In 1919, in the United States the per capita consumption was not less than ninety pounds, and probably not far from ninety-three pounds, per year. The enormous increase is explainable in only one way—namely, the demand of humanity for a quick fuel.

Light wines and beer have each a slight food value; so has brown sugar. White sugar is a robbed food and has only a fuel value. Chocolate confectionery, with its food element, therefore, has become wonderfully popular. During the war it was frequently issued as a ration to the man in the front. To say that men craved it is putting the case mildly.

The per capita consumption of sugar will increase in the near future possibly to more than one hundred pounds. The consumption of chocolate will also increase by leaps and bounds.

The physiological effect of the intemperate use of sugar, as compared with that of light wines and beer, is a matter which the physician must study in the near future. Of one thing a chemist may speak with authority: the use of clean brown sugar, and also of honey, is far preferable to that of white sugar. Neither one, however, will take the place of light wines and beer.

INFECTIONS AND VACCINES.

The *Journal of Laboratory and Clinical Medicine* for May, 1920, in an editorial on this subject concludes that vaccines (autogenous) seem to be useful in the following infectious disorders:

1. Furunculosis and localized abscesses in soft tissues.
2. Acne vulgaris.
3. Colon bacillus, pyelitis and cystitis.
4. Chronic gonorrhea and gonorrheal rheumatism.
5. Chronic bronchitis.
6. Bronchial asthma of bacterial origin.

Vaccines seem to be of little or no value in:

1. Infection of bone or infections in cavities with rigid walls.
2. Infection of the intestinal tract.
3. Infection of the uterus and adnexa.

Vaccines are contraindicated in:

1. Acute infections and infectious diseases.
2. Septicemia and pyemia in the acute stages.
3. Malignant endocarditis.

BETANAPHTHOL POISONING IN THE TREATMENT OF HOOKWORM DISEASE.

SMILLIE, in the *Journal of the American Medical Association* of May 29, 1920, states that the following definite conclusions concerning the toxic action of betanaphthol were arrived at as a result of the experiments that he describes:

1. Large doses of betanaphthol (18 gm. for adults) used in the treatment of seventy-nine cases of hookworm disease produced very severe toxic symptoms in two cases, and also produced marked changes in the blood cells of two other cases.

2. The toxic action of betanaphthol in these four cases was a destruction of the red blood cells. The drug selected the red blood cells and destroyed them in great numbers, with resultant severe anemia, icterus, enlargement of the spleen and liver,

enlargement of the gall bladder, and hemoglobinuria. The white blood cells apparently were not destroyed by the drug. The liver, spleen, kidneys, and other organs of the body were not affected primarily, but were markedly affected secondarily, because of the anemia, and because of the injurious effects produced by the elimination of large numbers of destroyed red blood cells.

3. The type of cases that are most susceptible to the toxic action of betanaphthol poisoning has not been determined. In all three of the severe cases of poisoning there was a history of recent malaria. It is probable that those cases in which the red blood cells are rendered more fragile by recent malaria are more susceptible to betanaphthol poisoning.

4. Betanaphthol, in 18-gm. doses, is so toxic that it cannot be recommended for general use in the treatment of hookworm disease.

[Any drug which tends to destroy the red cells would seem to be contraindicated in a disease which causes anemia.—ED.]

NASAL AND ACCESSORY SINUS HEADACHES.

KEARBY, in the *Indianapolis Medical Journal* for May, 1920, states that as a result of the close proximity of membrane and periosteum of nose and paranasal cells, chronic inflammation of one involves the other, with an end result of abnormal enlargements, as spurs, ridges, deviations, hypertrophied bone cysts, all combining to make pressure, block drainage, and in some cases to make of the sinuses, automatically, an incubator for the growth of pyogenic bacteria, and a septic as well as pressure headache results. In other cases sufficient exostosis occurs to completely fill and occlude the normal drainage outlet, as the nasofrontal duct or maxillary ostium, with a resultant absorption of the air therein, and a vacuum headache follows.

In other cases these deformities make sufficient pressure on soft tissues, sensitized to the tenth degree, as the middle turbinate is, and produce a headache typically its own, independent of the nerve center, and mechanical in origin.

Vacuum frontal headaches (described by Sluder), with eye symptoms only, are due to a closure of the nasofrontal duct by reason of the above mentioned pathology. The air is absorbed or partially so, and the negative pressure makes the walls sensitive. The pulley of the superior oblique muscle is attached to the floor and thinnest part of the sensitive wall. Use of the eyes for near work causes a frontal headache, which cannot be relieved by glasses or eye treatment. There will be no basal symptoms other than, perhaps, obstruction to breathing on the particular side of the head affected.

Ewing was the first to describe this condition, and the diagnosis is made by "Ewing's sign," namely tenderness of the upper inner angle of the orbit at the attachment of the pulley of the superior oblique, and internal and posterior to it.

Vacuum maxillary antrum pain is probably due to this same sensitization of the sinus walls. This pain is severe over the antrum, with marked tenderness, elicited on pressure, under the infraorbital ridge, over the inner half, toward the nose, a full feeling in the nose on the side affected, and more or less sensitiveness of the upper teeth on that side.

This must be differentiated from empyema of the antrum, and is done by the absence of severe nasal symptoms, discharge, temperature and systemic toxicity, also *x*-ray findings, with the addition of another sign of empyema of antrum to which Kearby desires to call particular attention: a slight bulging upward or dimple of the mucous membrane of the floor of the nose opposite the anterior end of the inferior turbinate on the affected side. This can readily be demonstrated in examination by comparing the well side.

The same might be said of vacuum ethmoidal headaches as the preceding. These vacuum headaches are to be differentiated from empyema headaches only, and

the latter are accompanied by temperature, congestion, pus, and toxicity.

The treatment is aeration of the sinuses, first by use of medical astringents, and if these fail a surgical procedure is neessary.

Baterial invasions of the mucous membrane of the nose and accessory sinuses are accompanied by headaches of more or less severity; the intensity and duration of headache being dependent largely upon the severity of the disease, its location is determined by the anatomical part affected. The intensity ranges all the way from the uncomfortable full feeling of congestion to that of intense pain due to pus under pressure.

Ordinarily in this class of cases the headache is not the presenting symptom, or chief complaint, and the physician arrives at his conclusion of the cause of the headache in his careful history taking and physical examination, in its being one of a group of symptoms complained of.

Congestive headaches are described as a full feeling in the frontal region with dull pain about the root of the nose, which is reflex in character, due to congestion, or engorgement of the mucous membrane of the nose, especially the middle turbinate and posterior part of the inferior turbinate. The graver pathology found in acute rhinitis only intensifies these symptoms.

Mental hebetude and frontal headache with local tenderness between the eyes accompany chronic rhinitis. The pain symptoms are enlarged, and more persistent in hypertrophic rhinitis due to the associated accessory sinus involvements which usually accompany this disease.

In atrophic rhinitis the frontal headache is due in the beginning of the disease to congestion, and in late stages to pressure from crusts.

Infection of the sphenoidal sinus and posterior ethmoids is accompanied by a sense of weight and fulness deep in the middle region of the head, with a vague sense of occipital distress and possibly pain along the whole distribution of the fifth nerve. However, in this pathology the headaches are not characteristic of the lesion above, and other conditions must be differentiated. The diagnosis is difficult.

Simple chronic nasopharyngitis gives a dull frontal headache, pain in the nape of the neck, with a dull, heavy, tired feeling in the head and incapacity for work, either mental or physical.

Headaches due to suppuration in the accessory sinuses are partially toxic in nature and partially reflex, due to pressure. They are accompanied by a sense of intranasal pressure, with a sense of fulness and tenderness over all the areas controlled by the distribution of the fifth nerve. In fact, it is the irritation of the distributory branches of the nerve which produces the syndrome of nasal and accessory sinus neuralgias.

The same principle is involved in pressure headaches, due to impingement of deformities upon sensitive terminal fifth nerve endings. To appreciate the pathology of these pressure headaches a thorough knowledge of the physiology and anatomy of the fifth nerve, its great distribution and associated ganglia must be had, mention of which can be given only in a paper of this sort. These neuralgias are very common and cause much distress and discomfort. They are not self-limiting by recovery, but persist through the allotted span of life of the individual. Headaches of a toxic nature due to infections in the nose and sinuses are self-limiting and we know will cease when the condition, of which they are symptoms, ends by recovery of the patient.

The most common type complained of is usually limited to one side; the pain radiates from the inner half of the supraorbital portion of frontal bone, backward and across the temporal, and lower half of the parietal region, and deep in the ear and mastoid.

They are differentiated upon examination by finding the pressure deformities in the nose, and complete elimination of pain is made by anesthetizing the region where pressure is made with a drop or two of

saturated cocaine solution applied over the sphenopalatine foramen at the posterior tip of the middle turbinate.

Treatment is medical astringents, whereby a limited number of cases are relieved; however, the majority of pressure headaches require surgical intervention.

PROPHYLACTIC INCISIONS OF THE VAGINAL OUTLET DURING LABOR.

LEVY, in the *New Orleans Medical and Surgical Journal* for June, 1920, states that the subject of enlarging the vulva outlet and the importance of the prevention of lacerations of the perineum were appreciated even in the days of Hippocrates. Various methods of treatment were designated to accomplish this end, including dilatation with fingers, employment of lubricants, the use of colpeurynter, etc., all of which ultimately led to the employment of prophylactic incisions. These resolved themselves into the lateral incision, or episiotomy (or bilateral episiotomy), and the median incision, or perineotomy. Neither of these two has been frequently described in the literature, but Levy attempts in this article to contrast their relative merits and hopes to show where perineotomy, from an anatomical and surgical standpoint, is preferable.

First, we may consider the more usual indications for the employment of either of the above. These are resistant perineum, especially of the type found in old primiparæ, abnormalities in the size of the child, and when an indication presents for a rapid delivery. That either an episiotomy or a perineotomy are considered good obstetrical procedures may be gathered from the numerous men of prominence who recommend their use. One of the earliest to recommend a prophylactic incision, as he likes to term it, is Jewett, who in the American Text-book of Obstetrics says that no method yields better results for the ultimate integrity of the pelvic floor. Brodhead, writing in the *New York Medical Journal,* under the title of "Episiotomy, and a Plea for its More Frequent Use," says that the operation is simple, and devoid of all danger. DeLee also highly recommends its use with the above indications present, and he now uses it in the majority of his primiparous deliveries. C. G. Child, Jr., in an article entitled "Episiotomy: Its Relationship to the Proper Conduct of Labor," strongly recommends episiotomy, giving a series of 116 cases, of which 112 were primiparæ. Harrar, writing in a recent issue of the *American Journal of Obstetrics,* states that in 44 per cent of the primiparous labors at the New York Lying-in Hospital definite lacerations requiring repair occur, and strongly recommends, as we do, the median incision, or perineotomy.

As to the advantages of the median incision over the lateral one, he considers the following the salient points, viz.: The median is the more anatomical of the two, and being in the midline, which is the weakest point of the perineum, it naturally tends to prevent further tearing, and it allows for an equal enlargement of the vaginal outlet. This is just the contrary with perineotomy. Better union, due to its very position, is obtained in the median position. The chief advantage, and one which it seems to Levy that lateral episiotomy defeats, is that the muscles constituting the pelvic floor are not injured.

As to the actual operation of perineotomy, he proceeds as follows: The patient is anesthetized to the surgical degree and then put in the lithotomy position. The perineum is sterilized with tincture of iodine, and the rectum is then protected as in ordinary perineorrhaphy. Then, inserting two fingers between the advancing head and the tensed perineum, an incision is made between the two fingers, adhering strictly to the midline of the perineum.

The length of the incision, which is sometimes carried down to the sphincter ani, depends upon various factors, viz., the size and rigidity of the outlet of the birth canal, and the relative size of the presenting part.

Closure of the wound is made as follows: Each side is grasped by a Smith hook placed just at the level of the fourchette. If the incision has been fairly deep, two or three buried sutures of twenty-day chromic No. 3 catgut are employed. The more superficial structures, including the skin, are then approximated by interrupted sutures. There are two points in the tying of these sutures that he wishes to emphasize, and that is, do not put too much tension on them, as a swelling of the parts always occurs, and the sutures are likely to cut through; and secondly, tie at least three or four knots, so as to make sure the sutures do not become untied when they become moistened.

In concluding he lays emphasis on the following: Perineotomy, as such, or in the combination with low forceps, is an excellent surgical and obstetrical procedure, as it relieves the undue strain upon and lessens the stretching of structures entering into the formation of the pelvic diaphragm, and furthermore, in reducing the time of delivery, relieves a great deal of pressure upon the child's head, a feature which is so often passed over lightly by the average physician.

NITROUS-OXIDE-OXYGEN ANESTHESIA IN MILITARY AND CIVILIAN PRACTICE.

In an editorial on this subject the *Boston Medical and Surgical Journal* of April 15, 1920, states that the types of cases in which gas-oxygen was found to be most valuable included shock cases, cases in which operation was to be of short duration, cases in which the condition was profoundly bad and the postoperative period treacherous, chest cases, with the exception of those liable to show hemorrhage, and infection of the respiratory tract. Gas-oxygen is of great value in war surgery since the greater number of delayed primary and secondary suture of wounds can be made with the use of this anesthetic alone.

Three special advantages of gas-oxygen in war surgery were mentioned: (1) The ease and rapidity of inducing anesthesia, thus preventing a struggle, enabling the immediate beginning of the preparation of the field of operation and the carrying on of several parallel operations without the one disturbing or distressing the other; (2) rapid recovery and rapid exchange of patients between operating-room and ward; (3) the relief from the care of recovering patients on the wards and the consequent liberation of the personnel for other duties. All these points are important when one considers the large number of secondary wound closures—often as many as sixty in a single day. The comfort of the patient is also a decided advantage. There was no death nor injury from this anesthetic.

INTRACARDIAC PRESSURE AS A STANDARD IN CARDIOTHERAPY.

HARRIS, in the *Lancet* of May 1, 1920, states that puncturing of the lower extremities is useful and quite safe if the rules of asepsis are observed. He found adrenalin a most useful drug for removal of edema in such cases. Adrenalin probably acts as a diuretic, and does not affect the intracardiac pressure. Where digitalis is indicated graphic methods will be able to guide us in respect to the exact doses of the drug it is safe to administer. Caffeine acts in many respects as an antidote to digitalis, and one is able to neutralize the objectionable features of the latter as manifested by electrocardiographic signs, by countering digitalis with caffeine.

In commenting editorially on the paper by Dr. Harris, the *Lancet* for the same issue, May 1, 1920, says digitalis is so valuable in the treatment of many forms of cardiac embarrassment that it is, perhaps, not sufficiently recognized that its effects are complex and they are not invariably beneficial. The fact that it depresses conductivity is now generally admitted, and its use in conditions of "blocking" is contraindicated; indeed it may induce this condition if injudiciously employed. Dr. Harris refers to certain effects of large doses of digitalis shown by

the electrocardiograph, which suggest its discontinuance in any case in which they appear. He finds that medium doses of digitalis increase the intracardiac pressure, whilst large doses lower it considerably, and he brings forward some observations which show that strychnine has a definite action upon the frequency of the heart-beat, lowering it in many cases and having a favorable influence in some forms of irregular heart action. Dr. Harris is of opinion that his observations prove that digitalis is indicated in cases which show his first type of cardiac failure, whereas it is to be avoided in those of the second type. In the latter he thinks that caffeine is a useful drug owing to its effect in lowering intracardiac pressure without decreasing arterial tension. At the same time he admits that many patients cannot take it for any length of time owing to its action on the nervous system; and under these conditions he recommends atropine. Even the occurrence of edema he does not regard as indicating the use of digitalis in this class of case, and he advises puncture of the legs and the use of adrenalin.

REPORT OF A CASE OF SODIUM NITRITE POISONING.

OLIVER, in the *Ohio State Medical Journal* for June, 1920, states that sodium nitrite has only a rather limited use commercially. It is used in laboratories chiefly as a reducing agent. In photography small quantities are employed in the reduction of silver. It fulfils a similar rôle in the manufacture of certain of the aniline dyes of commerce. Medically, its use as a remedial agent is well known. The fertilizers of commerce, which are composed largely of sodium nitrate, also contain frequently appreciable quantities of the nitrites due to the reduction of the nitric salt. It is of interest in this connection that Barth, in 1883, called attention to the poisoning of cattle by $NaNO_2$ due to the presence of fertilizer in their fodder. The symptoms occurring in these animals were practically identical with the toxic manifestations in man. The symptoms briefly noted in animals are as follows:

(1) Drowsiness and giddiness.

(2) Primary elevation of temperature, followed by a secondary fall.

(3) Fibrillar contractions of the muscles.

(4) Deep, labored respirations.

(5) Vomiting and yawning (in dogs).

(6) Browning of the color of the blood (due to the formation of methemoglobin).

(7) Occasional paralyses.

(8) Death without spasm or convulsion.

(9) Accompanying the above, of course, there occurs a marked fall in blood-pressure.

It is because of the inaccessibility of this substance and its almost negligible use commercially that accidental poisoning seems so remarkable.

Among certain of the aniline dye workers of Germany a chronic form of nitrite poisoning has been noted. The chief symptoms described are headache, cyanosis, low blood-pressure, hemoglobinuria, and a rather severe secondary anemia.

Sinegar reports the case of an infant that died as a result of nitrite poisoning due to the use of a mistaken prescription.

Gordon Sharp, in 1894, describes a non-fatal poisoning case.

Gibson warns of the alarming symptoms that occasionally follow its therapeutic administration.

Ringer and Murrell early noted its toxic properties when pushed beyond the therapeutic dosage.

Of all the cases above noted, however, the toxic substance used was known and the symptoms followed its therapeutic use. The case here presented, as will be readily seen from the following description, offered a much more difficult problem and, because of its extreme rarity, was not at once recognized.

An unknown white man, approximately forty years of age, was admitted to the ward, June 12, 1919, at 10:30 P.M. He was comatose, dyspneic, intensely cyanotic, and

his skin was bathed in a profuse, cold perspiration. Previous to his admission to the medical ward he had been given a gastric lavage, as it was suspected that he had taken poison. There were spasmodic twitchings of the arms and hands and convulsive contractions of the jaws. During these attacks he crunched his teeth, and it was impossible to separate his jaws. His breathing was very stertorous and irregular. There were periods of apnea lasting for from fifteen to twenty seconds, followed by irregular, violent, noisy, and forceful respirations. The pulse was large, dicrotic and regular, and of fair tension. No history, of course, was obtainable at this time, but a preliminary physical examination was made. Temperature on admission 98.2°.

The pupils of his eyes were about 2 mm. in diameter and did not react to light.

There were no abnormal findings in the chest. The lungs were clear throughout, and there were adventitious sounds. The transverse diameter of the heart was not increased and the heart sounds were strong and clear. The examination of the abdomen revealed no abnormal signs. Extremities negative.

The patient was given an intravenous injection of Fischer's solution (500 Cc.). Because of the extreme cyanosis the administration of oxygen was started at 11 P.M.

He was seen at 12:30 (midnight) and his condition seemed somewhat improved, although he still remained comatose. The cyanosis was less marked and the convulsive attacks were practically checked. The respiration was still very labored and irregular, but his pulse remained good throughout. Temperature was slightly elevated (99.2°). It is to be regretted that no blood-pressure determinations were made at this time, as the nature of the poison was not known.

The next morning his condition was completely changed. There was still some cyanosis of the lips and ears, but his color otherwise was good. The patient was breathing quietly and perfectly conscious. The following history was then obtained from him.

He said that he found a jar of what he supposed was table salt, and that he took it to his home. He ate six or eight radishes for supper and dipped them into the salt above mentioned. He said that it tasted like salt and he thought nothing of it. He also had two cheese sandwiches, three meat sandwiches, and some beer. He took no medicine of any kind. Ten or fifteen minutes after eating he became dizzy. He then went to a saloon to get some more beer. While he was sitting on a bench with some friends they noticed that his face began to "color up." They became frightened and called a patrol wagon. He remembers reaching the hospital, but recalls nothing further until early the following morning. The patient states that he knows of no one else who was taken sick. He states that he sent one of his friends back to his boarding-house to get the "salt," as he evidently suspected that it caused his trouble. We obtained the "salt" from the Receiving Ward and immediately had it analyzed, the report being that the substance was sodium nitrite.

A thorough physical examination was then made, but the findings were negative except for evidences of cerebrospinal lues. A blood-pressure reading was taken and noted as follows: Systolic 98; diastolic 60. Urinalysis was negative.

THE MEDICAL TREATMENT OF TUBERCULOUS PERITONITIS IN CHILDHOOD.

The *New York Medical Journal* of May 22, 1920, in an editorial on this subject states that although the various forms of tuberculous peritonitis are well known at the present time, there is still some difference of opinion as to treatment. Medical treatment consists of rest cures, forced feeding, altitude or seaside sojourns, and heliotherapy. In the chronic types of tuberculous peritonitis of childhood surgical treatment should be rejected, except

in the fibrocaseous form with abscess formation and in certain instances of unilocular suppurating peritonitis. Surgical intervention may also be required in some cases in which a too rapid cicatricial sclerosis provokes phenomena of intestinal occlusion.

Puncture, followed by injections of various substances, such as iodoform, should be discarded; this is a blind and ineffective measure, not always without danger, because there is considerable risk of wounding the intestine, which is frequently adherent to the anterior abdominal wall. All things considered, medical treatment is the one of choice. There is no specific treatment nor climate which can assure a cure, but the possibility of complete recovery is admitted at the present time, since Grancher showed that the tubercle itself contained the germ of cure. Therefore, the physician should endeavor to give strength to the patient and stimulate the process of cure possessed by the organism against tuberculous infection.

During the last few years the seaside treatment has been employed to some extent in France in the treatment of chronic tuberculous peritonitis. This treatment consists of sea baths, or salt-water baths, hot or cold, body exposure on the beach, or sailing. Brilliant results have unquestionably been obtained in all chronic forms of the process—ascitic, fibrocaseous, or fibroadhesive. These patients can be sent to the seaside without reference to other bacillary lesions present, pulmonary or otherwise, and without waiting for a drop in the temperature or an amelioration of the acute manifestation.

Heliotherapy has likewise given remarkable results and can be employed in all the forms of tuberculous peritonitis, and in high altitudes its results are not less appreciable. Both treatments—seaside and heliotherapy in a high altitude—naturally necessitate two very different climates, and the question of climate in the treatment of tuberculosis is both delicate and much mooted. As Huchard once said: "Climate, a complexus of physical agents, is a powerful medicament, and as such requires measured doses like any other." It is for the physician to decide whether or not a certain form of the process is susceptible of improvement or cure by treatment at the seaside or in a high altitude.

However chronic tuberculous peritonitis in childhood appears to act somewhat differently from pulmonary tuberculosis, and clinical results show that it does well in either of the two climates. Finally, although only of recent date, is the association of both methods, thalassotherapy and heliotherapy; in other words, a heliomarine cure may be indicated in certain cases, and everything tends to show that the results of this treatment are excellent, thanks to those two marvelous therapeutic agents—the sea and the sun.

STANDARDS OF MINOR WOUND TREATMENT.

In *Modern Medicine* for May, 1920, SELBY states that to attempt to standardize the whole field of industrial surgery at one time would be quite impossible; the field is altogether too broad, but inasmuch as the minor injury is the most evident reason for the employment of industrial physicians, it seems appropriate that standards of minor wound treatment should receive first consideration. As a matter of fact if standards of wound treatment are devised a meritorious work will have been accomplished.

The following standards are presented as a basis:

Fresh Wounds—

1. Remove devitalized tissue.
2. Cleanse with ether.
3. Spray or swab wound with iodine (2 per cent).
4. If cavities exist, pack them with dry gauze.
5. Dress dry.

Infected Wounds—

Treat all wounds as though infected the

second, third and fourth days after injury is received.

1. Remove all scabs and loose skin.
2. Cleanse with ether.
3. Spray or swab with Dakin's solution of sodium hypochlorite.
4. If cavities exist, pack with gauze saturated with Dakin's solution.
5. Dress moist.

Clean Wounds—

Treat all wounds as clean on the fifth day and after unless infected.

1. Spray or swab with a neutral hydrocarbon oil containing iodine.
2. If cavities exist, pack them with dry gauze.
3. Dress dry.

Indolent Wounds—

1. Cleanse with ether.
2. Spray or swab with argyrol (5-per-cent solution) or swab with balsam of Peru.
3. If cavities exist, pack them with dry gauze.
4. Dress dry, using slight pressure.

Burns—

1. Apply hydrocarbon salve and dress dry.
2. This may later be varied with neutral hydrocarbon oil containing iodine.
3. Or treated as an indolent wound.

The equipment and materials used in the treatment of minor wounds are usually placed upon a dressing table where they may be easily reached by the physician or attendant. The following is a list of equipment and materials. It is offered without comment:

1. One five-by-six-inch white enameled jar containing 1-inch bandages.
2. One five-by-six-inch white enameled jar containing 2-inch bandages.
3. One five-by-six-inch white enameled jar containing sterile gauze.
4. One five-by-six-inch white enameled jar containing sterile cotton.
5. One five-by-six-inch white enameled jar containing sterile wooden tongue blades, used as spatulas for the application of an ointment, and applicators tipped with cotton swabs.
6. One three-by-four-inch white enameled jar containing a neutral hydrocarbon ointment.
7. One two-by-one-inch covered glass dish containing sterilized rubber tissue cut in strips for drainage purposes.
8. One four-by-seventeen-inch white enameled tray containing six splinter forceps, six sharp-pointed scissors, and six probes, all sterilized.
9. One medicine glass, containing a 5-per-cent solution of carbolic acid, in which is kept forceps for the removal of sterile instruments from the previously named tray.
10. One three-by-eight-inch white enameled tray in which are discarded used instruments, and from which they are gathered from time to time for sterilization.
11. One hard-rubber atomizer containing a 2-per-cent solution of iodine.
12. One ordinary atomizer containing Dakin's solution, made fresh daily.
13. One atomizer containing a solution of iodine in hydrocarbon oil.
14. One atomizer containing benzine.
15. One can of ether.
16. One jar of solidified liniment.
17. Several one-fourth-inch strips of adhesive plaster.
18. One bandage shears.
19. A number of aluminum finger guards. These are very useful; they enable workmen who have lacerated finger-tips to continue at work with a great deal more comfort than if ungarded.

OCULAR SYPHILIS AND ITS TREATMENT.

YOUNG, in the *American Journal of Syphilis* for April, 1920, in his conclusions states:

1. That primary ocular syphilis is rare, considering the various possibilities of infection.
2. That the use of atropine sulphate in ocular lues should be under the personal supervision of an oculist.

3. That arsphenamine is the most potent drug in the treatment of ocular syphilis, mercury alone having but little effect.

4. That the number of arsphenamine injections is limited only by untoward symptoms which may develop, or lack of improvement in the ocular lesions.

5. That, finally, the effect of mercury alone in ocular lues is uncertain and in a large percentage of cases will neither control nor improve the symptoms.

A CASE OF DIABETES INSIPIDUS.

SCHNABEL and GERHARD, in the *New York Medical Journal* of May 8, 1920, record a case in which the patient's disease was diagnosed as diabetes insipidus, yet the course of her disease materially altered after about fifteen months. Over three years has elapsed since the onset of the disease and two years since the cessation of symptoms. Pituitrin was given hypodermically with very immediate antidiuretic effect. The specific gravity, while still fixed at a low figure, is comparatively elevated now. Sterile water, corpus luteum, and adrenalin hypodermically, and extract of pituitary gland by the mouth, were without appreciable effect.

VACCINE THERAPY IN GYNECOLOGY.

ROBERTSON, in the *Edinburgh Medical Journal* for May, 1920, states this point about a bacillus coli infection: After a case has acquired a certain chronicity of infection, it seems to be impossible to eradicate bacillus coli, but the patient can be kept in perfectly good health by an injection once a month or six weeks. The immunity in such a case can be got by the use of stock vaccine.

He has treated a number of cases of chorea on the understanding that chorea is an irritation, probably of meningitic nature, irritating the nerves, and rheumatic in its origin. These cases, mostly in young people, have all done exceedingly well, and he has treated a considerable number of them. He came across a case of chorea in pregnancy in a poor woman, and the condition was certainly very bad. She was treated with three stock vaccines. However, her mother got tired of nursing her and asked him to send her into the Maternity Hospital, which he did, although he told the mother that she was a great deal better and would probably come all right. She was kept only a week or ten days in the hospital, when she was sent out. There was no return of the chorea, and she was delivered with no further recurrence. She has had a second child with no return of the chorea.

Robertson showed a chart of a puerperal septicemia, in which on the third day after the confinement the temperature rose. A staphylococcus and streptococcus vaccine was at once given. The next day the uterus was swabbed out with 1-in-5 carbolic acid. The swab was reported to contain staphylococcus and streptococcus. The temperature gradually began to fall two days afterward, and the woman made an uninterrupted recovery. It may be said that this result was due to the swabbing out of the uterus, but the probability is that this case was saved a pretty prolonged and dangerous illness by having her resistance toned up against the staphylococcus and streptococcus which were found in the uterine swab. There are charts in his possession of pneumonia cases in which he frequently got the same happy results. He thinks if a sufficient number of cases were collected they would go to prove that this is an advance on the usual routine treatment.

Another point of importance here is the very early use of the vaccine before there was a great circulation of toxins in the blood. He also had a case of an outlying portion of the placenta being retained in the uterus. The patient seemed to get on well except for a very rapid pulse; no temperature. He suspected some septic process, and gave a staphylococcus and streptococcus vaccine, and was very disappointed that the pulse-rate did not come down. He therefore decided to explore the

uterus, and found this small piece of placental tissue lying there. Immediately after its removal the pulse fell, but he believes in this case, had it not been for the use of the vaccine, he would have had a typical septicemic case. This illustrates the limitation of a vaccine. Unless the septic focus can be got at, and either removed or free drainage provided, a vaccine is not likely to be beneficial.

Robertson had some interesting cases of phlebitis treated with bacillus coli, and the results are sufficiently striking to justify this agent being employed in all cases. He thinks, from his experience, that a fair amount of amelioration may be expected in a large proportion of the cases, and a much greater rapidity of recovery can be pretty confidently looked for. If it is used sufficiently early excessive clotting in the vein will be prevented, and a readier absorption of the clot with a quicker return of the circulation. He has not had an opportunity of trying this in a case of "white-leg" coming on acutely after a confinement, as he has not had such a case since using the vaccine for this purpose. In regard to this particular question, it is usually looked upon as a sign of sepsis when it occurs after a confinement, and he has heard medical men suggest that the doctor is responsible for the condition. He had one interesting case in which the phlebitis came on first; the patient was very ill, and the abortion took place during the course of the very severe illness which resulted from the phlebitis. In this case some stock bacillus coli vaccines were used, and may have helped her recovery, but he has not had enough experience to give him the necessary courage to persevere with them. It is an interesting commentary on "white-leg" following confinement, and since that case he has been of the opinion that the condition of the leg is dependent upon a lowered resistance to the bacillus coli already invading the blood.

From his consideration of the cases reported here and many other cases treated by him by vaccine therapy, it seems that a closer coöperation between the physician and the bacteriologist is necessary. The practice of medicine is becoming such a complex business that no one man is capable of dealing with the cases unaided, and it seems to him to be a pity that there is not a greater amount of team work undertaken, whereby a closer coöperation would take place with the physician, the surgeon, the bacteriologist, and the radiologist.

[We wish we could feel as optimistic as does the author of this paper as to his use of vaccines.—Ed.]

CHRONIC GONORRHEAL SEMINAL VESICULITIS.

Smith (*Urologic and Cutaneous Review*, March, 1920) notes that in military practice the posterior infection was limited to less than 10 per cent, and vesicular and prostatic involvement to less than 2 per cent of the cases. This was accomplished by complete rest in bed, together with the application of ice and injection of mild silver derivatives; which enabled him in the majority of instances to eliminate the gonococci within from three to ten days.

Chronic vesiculitis is usually due to untreated or improperly treated acute vesiculitis. The causes of acute vesiculitis are essentially the causes of acute posterior urethritis. Posterior urethritis is a preventable complication in approximately 90 per cent of the cases, and is due largely to muscular activity and improper drainage.

As to the diagnosis of seminal vesiculitis the author believes that in only a small percentage of the cases can the vesicle contents be satisfactorily obtained by stripping. Where any doubt as to the vesicular condition exists, it is well to require one, or preferably two, ejaculated specimens for microscopic examination. The prostate is first massaged to eliminate, as far as possible, contamination from this source. The urethra and bladder are then washed with a mild antiseptic solution, and the patient instructed to void his urine just

before intercourse, which should occur just as soon after the prostatic massage as possible. In order to preserve the specimen for examination the patient should make use of a rubber condom. Microscopical examination of the vesicular contents to determine the presence of blood, pus, or gonococci should be made as soon as practicable after ejaculation.

Findings by rectal palpation are not constant in these cases. Usually a distended and exquisitely tender vesicle is found.

Diagnosis is most difficult in the cases in which a persistent urethral discharge containing gonococci exists. In these cases responsibility can only be fixed on the vesicle by the process of elimination.

The diagnosis then must depend upon a digest of the clinical aspect, in combination with the laboratory findings.

Pus and gonococci when demonstrated in the vesicular contents by microscopical examination are obviously diagnostic in 100 per cent of the cases. However, microscopical findings do not always disclose the presence of the vesical infection.

The late phase is almost entirely postgonorrheal. A secondary infection supersedes the gonorrheal involvement, and fibrosis of the ejaculatory ducts or the vesicle itself occurs. As a result pain and derangement of sexual function follow. Neurotic symptoms predominate.

Smith believes that in combating these cases of chronic gonorrheal involvement of the vesicles we have in vasotomy and vasopuncture with vesicular medication our most efficient weapon.

Where a coincidental infection of the prostate and posterior urethra exists the condition should be eliminated, as far as possible, before the operation is done. Especially is this true of those cases in which recurring epididymitis is an outstanding feature. It is essential that the best condition for vesical drainage first be established, and this cannot be done while the spermatic ducts are surrounded by a hard, infected prostate.

Prostatic massage, followed by instillation into the prostatic urethra of a 2-per-cent solution of nitrate of silver, should be performed every second to fourth day, according to the tolerance of the patient. This may be supplemented by daily injections of 10-per-cent argyrol into the anterior urethra until any acute exacerbation that may be present has subsided.

The field of operation should be prepared as in any other surgical procedure. The vas is first identified and brought up beneath the skin on the anterior aspect of the scrotum as near as possible to the external ring, and a small towel clamp placed beneath it. Care should be exercised to exclude the cremaster muscle and other cord structures. If these structures are properly excluded the application of the clamp causes but slight discomfort. While an assistant holds the first clamp, a second is placed in the same manner about one inch below the first. The vas is now suspended between the two towel clamps, and a vasotomy clamp, which the author has devised for this purpose, is placed horizontally beneath the vas. The towel clamps are now removed.

The vas now lies just above the vasotomy clamp and beneath the skin. If the technique is properly carried out up to this point, the patient should have no further discomfort. The next step is the infiltration of the skin and tissues about the vas. A one-half of one-per-cent cocaine solution is used for this purpose. A few drops of adrenalin added to the cocaine will eliminate practically all bleeding. A short incision is now made through the skin, readily exposing the vas. It is important that the several fascial layers be carefully and completely removed from the vas, otherwise considerable annoyance is apt to result when one attempts to make the puncture. A small towel clamp is next placed about the vas, the vasotomy clamp removed, and the vas drawn through the wound. A small puncture is made, and a silkworm-gut passed into the vas to determine its patency. About 10 Cc. of a 25-per-cent argyrol solution is injected through the vas, filling the vesicle, and forcing open the spermatic ducts. The fluid is forced entirely through

the vesicle and ejaculatory ducts into the prostatic urethra.

The vas is now returned to the scrotum, but before doing so it is well to see that argyrol is not escaping from the puncture. This can be avoided by waiting a few moments to allow the argyrol to drain out of the vas. Otherwise a painful swelling is apt to occur should argyrol escape from the vas into the tissues after the skin wound is closed. As soon as the argyrol ceases to escape, the vas is dropped back into the scrotum, the tunica vaginalis closed with fine catgut, and the skin wound with silkworm-gut. The same procedure is then carried out on the opposite side.

The amount of solution used for injection into the vesicle varies. In addition to an amount sufficient to fill the vesicle, enough should be injected to open the spermatic ducts and wash through into the posterior urethra. During the process of injecting the fluid, one can detect a sudden decrease of pressure when the fluid passes the spermatic outlet into the prostatic urethra. This opens the ducts, and prevents undue intravesicular tension, which in many instances is responsible for nocturnal emissions during the first or second night following operation, and which should, if possible, be avoided. Also the tendency of the solution to drain back through the puncture in the vas, at the time of operation, is greatly reduced.

These patients should be kept in bed for at least seventy-two hours. They should not be allowed to sit up or to move about in bed for forty-eight hours, in order to prevent, as far as possible, the expulsion of the argyrol from the vesicles.

The majority of the patients can be permitted to leave the hospital on the third or fourth day, and experience only slight tenderness at the site of operation. The higher the incision is made in the scrotum, the less apt is postoperative tenderness and swelling to develop.

Thomas has reported a cure in 37.9 per cent, improvement in 52 per cent, and no change in 10.1 per cent of his cases. The cases reported by him, however, were all of long standing, and had resisted thorough and persistent non-operative treatment. The cases, as described, were not essentially of the gonorrheal type, but embraced the several other types of vesical infection, including postgonorrheal and non-gonorrheal.

Granting that many cases of gonorrheal vesiculitis can be cured by persistent stripping of the vesicles, the fact remains that experience has demonstrated that the life of the infection is materially shortened by early operative interference. The patient is quickly eliminated from the army of gonorrhea carriers, and a cure can be accomplished before the patient, whose morale is with difficulty maintained, seeks relief in distant and greener fields.

Certainly much disability resulting from epididymitis and postgonorrheal changes in the vesicles could be avoided, together with attendant discomfort and future disability to the patient.

After vesicular medication prostatic and urethral involvement readily yield to therapeutic measures, which otherwise require long periods of persistent application to effect a cure. Until the vesicular focus is eliminated, the prostatic and urethral condition resolves itself into the problem of keeping the infection in check until such time as the vesical infection becomes self-limited.

In a series of 100 consecutive cases of chronic gonorrheal vesiculitis treated by the combined operative and postoperative treatment, in 98 per cent of these cases the gonorrheal infection was eliminated on an average of twenty-four days following operation. In many instances in which a profuse urethral discharge, with abundant gonococci, was present at the time of entrance into the hospital, no discharge or infection could be demonstrated after the patient left the hospital four or five days later.

The control used in the determination of a cure in these cases was essentially the same method used in establishing a diagnosis, namely: Repeated microscopical examinations of the vesical contents and

the prostatic secretions, except that in addition to the above provocative intra-urethral counter-irritations, as sounding and instillations of nitrate of silver, were made use of to arouse possible remaining urethral infection.

MODERN TREATMENT OF STERILITY.

ARMSTRONG (*New York Medical Journal*, Feb. 28, 1920), writing on this subject, describes what he calls the coitus test, which is for the determination of the reaction between the spermatozoa of the man and the cervical and vaginal secretions of the woman. The couple have intercourse and the wife reports to the office within three hours. She is placed on the table in the Sims position, the cervix exposed, and a specimen taken from the cervix. The material is searched for spermatozoa. The cervix should be full of live spermatozoa from one to three hours after intercourse. The spermatozoa found in the vagina should also be examined, but the only ones alive in the vagina after one and a half hours are those that have been protected from direct contact with the vaginal secretions by the clotting mechanism of the semen itself.

If all the spermatozoa are dead, then we know that there is something in the woman's vaginal or cervical secretions, as the case may be, which destroys the motility of the spermatozoa. If the spermatozoa are dead or deficient in motility examination of the spermatozoa direct from the husband without admixture with the vaginal or cervical secretions of the wife should be made. This examination should be made soon after the spermatozoa have left the urethra.

The points to keep in mind in the examination of the spermatozoa are not only motility but the kind of motility, the vitality and the number of spermatozoa present. The motility, vitality, numerical frequency of spermatozoa may all be increased under high proteid diet, tonics, exercise, and correction of sexual abuses, but it is impossible to bring spermatozoa into the semen if there were no spermatozoa present before. When a spermatozoön is first produced in the testicle it is eosinophilic, and where ejaculated spermatozoa take the eosin stain we may rest assured that something is happening which is interfering with normal development of the spermatozoa.

Direct uterine insemination has been practiced by some men and is carried out by injecting about 5 minims of semen directly into the uterine cavity by means of a special catheter. Owing to social, religious and legal objections this method fell into disuse, but following the great success in impregnating animals by this method a more extended trial has been made and good results are claimed for it.

FECAL INCONTINENCE.

DRUECK (*American Journal of Surgery*, February, 1920) observes that fecal incontinence may result from injury to the lumbar spine, from disease within the rectum, or from traumatic impairment of the contractile power of the sphincter. The loss of fecal control may be complete or only partial. In transverse myelitis it may be mistaken by the patient for diarrhea. A temporary partial incontinence sometimes is associated with the severe prostration of acute or chronic diseases such as typhoid fever, cholera, pneumonia, and tuberculosis. Incontinence in any of these conditions may be followed by impaction of the rectum because of the loss of tactile sensation of the rectum and the lessened secretion of mucus to lubricate the fecal mass.

The most frequent traumatic causes of incontinence of feces are operation for rectal fistula and hemorrhoids, and rupture of the rectovaginal septum by childbirth.

Incontinence may follow dilatation of the sphincter, but only if there is some underlying spinal or nerve disease. Oblique, irregular, or jagged incision of the sphincter, even though single, may result in such a vicious union of muscle ends that

incontinence results. Transverse cutting of the sphincter is not likely to produce incontinence. The integrity of both sphincters is absolutely necessary for the voluntary control of the anus. If the muscle is cut squarely across and the ends united again so as not to materially increase the muscle length there will be good control. But if a wide band of scar intervenes between the severed sphincter ends the muscle will not sufficiently contract to thoroughly close the anus. Oblique incision of the sphincter allows the divided ends to slide upon one another until the internal fibers of one end unite with only the external fibers of the other end, thus very much lengthening the muscle, and frequently resulting in incontinence.

When the sinus of a fistula passes through the body of the external sphincter muscle an incision severs only the lower fibers. These may be left to close by granulations. But if the entire muscle is divided and the wound edges retract there is always some incontinence. If the sphincter is cut more than once incontinence is almost sure to occur.

Sometimes following childbirth the perineum is restored, but the anal sphincter is not united and incontinence results.

Four to six weeks following severance of the sphincter it retracts, although to a variable degree. Sometimes the muscle ends are still bound together and the tear only enlarges the circle slightly. In other instances the ends are widely separated and the muscle, which is thick and short, makes but a shallow arc behind the anus, with a deep dimple in the skin of the posterior raphe behind the location of the muscle. A smooth, glazed depression of the skin or sometimes puckered pits mark the location of the ends of the sphincter. Thus the ability of the patient to retain feces is not an index of the depth of the rent in the muscle but rather of the extent of separation of the ends of the fibers. If the cicatrix binds the ends firmly together an efficient sphincter may still obtain. In the less fortunate individuals who apply for help this approximation is what we hope to attain by a plastic operation. The individual can usually retain formed feces satisfactorily, but as soon as the discharges are at all liquid incontinence occurs. The result is that the patient limits his diet and uses drugs to maintain a degree of constipation which soon interferes with proper alimentation. Intestinal gases also escape, and the unpleasant odor forces him from society and he soon becomes melancholy, thus adding another chain of complaints. If the mucosa prolapses a rectal tenesmus appears. Many of these patients develop a nervous diarrhea excited by the least rumbling of intestinal gases. The whole complex of symptoms tends to reduce the patient's physical well-being.

When the incontinence is only partial much relief is obtained with galvanic electricity, hot fomentations, and a careful regulation of diet. These should be tried before resorting to operative interference.

The relief of incontinence depends upon our ability to reunite the severed ends of the sphincter. Our success also depends upon the amount of muscle destroyed in the original operation or the subsequent sloughing of tissues, and also upon the length of time elapsed since the damage was sustained. The muscle cut, and therefore unused, will atrophy, and in time is useless if reunited, or it may have degenerated so much that it cannot be found. If much tissue has been destroyed the muscle fibers may be too short to be brought together. Usually, however, the fibers because of their imperfect position are too long to act and the indicated operation then is to shorten and bring the ends into normal position.

If the patient suffers with a diarrhea the colon will need a thorough cleaning out a few hours before operation. It is well to give a light purge twenty-four hours before the time set for operation, so that its effect will be spent during the next twelve hours. Three hours before operation the colon is to be freed of all fecal matter by an enema given until it returns clear.

UMBILICAL HERNIA.

LUDINGTON (*New York Medical Journal*, March 27, 1920) contributes an excellent paper on this subject, well illustrated. He thus describes his operative procedure:

The initial incision is not made over the hernial protrusion, but close to that side of it which seems to promise the most direct route to the neck of the sac. This incision is immediately deepened to the rectus sheath and the lateral circumference of the ring is exposed. The hand is then introduced into the wound and the fingers by blunt dissection are worked entirely around the neck of the sac. The facility with which this may be accomplished is truly surprising. The difference in the feel of the tense, smooth surface of the transversalis fascia as it covers the sac wall, and the fatty tissue of the panniculus, is at once apparent. Only a very moderate amount of manipulation is necessary to separate the fat from the sac, because the procedure is conducted from the depth of the wound toward the surface, and the depth of the wound is firmly fixed. The transversalis fascia, though thin and attenuated, is sufficient to prevent any reasonable manipulations from tearing into the sac. As the hand approaches the surface, diverticulæ are immediately recognized, and the dissection carried around them. Using the hand in the wound as a guide, the skin incision may be safely and rapidly completed, so as to encircle the prominence of the hernial protrusion and remove a liberal amount of the skin on its summit without leaving large concave side walls of fat, since these tend to form dead spaces when sutured.

The neck of the sac is cleared of fat as far up as fibers of the transversalis fascia are clearly visible, and the sac opened, the contents liberated and returned to the abdominal cavity. It is important to be sure that the intraperitoneal aspect of the ring is absolutely free from adhesions. The sac is then amputated at the highest point at which the fibers of the transversalis are clearly marked. The stump left is usually about three-fourths of an inch long. This tissue plane, consisting of the peritoneum and transversalis fascia, is then overlapped, as in the Mayo operation, and secured by mattress sutures.

The inner margins of the sheaths of the recti are now incised from a point about half-way between the ensiform and the umbilicus to a point well below the first transverse line below the umbilicus. The mesial edges of these incisions are united by a contiguous stitch, thus adding a layer to the coverings of the umbilical region. The recti are then freed from their beds and overlapped in the midline, retained by mattress sutures passed as near the middle of the muscle belly as is convenient, and aided by interrupted sutures in the free edge of the upper muscle.

The anterior sheath is closed in the usual manner, and buried sutures are placed in the fat so as to carefully close all dead spaces. In closing the skin, provision is made for multiple small drains of folded rubber tissue, so placed as to permit of the egress of oil. Adhesive straps are so applied as to remove the danger of undue tension on the superficial sutures, caused by the lateral sagging of the fat of the abdominal wall. The aseptic technique must be faultless.

RELATION OF STOMACH ARTERIES AND ULCER.

In an excellent study of this subject REEVES (*Surgery, Gynecology and Obstetrics*, April, 1920) shows that the anatomic arrangement of the arteries along the lesser curvature of the stomach and throughout the first inch of the duodenum is such that these vessels are predisposed to thrombosis. The plexus of vessels in the submucosa on the lesser curvature is made up of much smaller and longer arteries without as free anastomoses as in other region of the stomach. The branches from this plexus run a very tortuous course to enter the mucosa. The resistance offered the blood stream is constantly greater, and as a

result the blood current is slower as it enters the small arteries of the mucosa. The submucous plexus of arteries in the first inch of the duodenum is made up of relatively few vessels in comparison with other parts of the duodenum. They are small and do not anastomose freely; they give off branches to the mucosa, some of which simulate the gastric type of spiral artery. The rather limited blood supply and the gastric type of artery predispose to thrombosis. Since these vessels are more liable to be occluded by emboli than are others, it is reasonable to suppose that emboli may be important factors in the production of ulcer by hematogenous infections.

In any consideration of ulcer it must be remembered that this disorder is relatively and actually rare; according to Osler ulcer is found at 1.32 per cent of all necropsies performed in the United States and in Canada. Finally, it must be remembered that high-grade bacteremias do not frequently produce gastric or duodenal ulcer.

THE USE OF POTASSIUM MERCURIC IODIDE FOR SKIN DISINFECTION.

McKenna and Fisher (*Surgery, Gynecology and Obstetrics,* April, 1920) observe that the choice of tincture of iodine apparently is based on clinical experience rather than on any exact experimental data concerning its bactericidal action on the microbial flora of the human skin. This tincture is said to penetrate the follicles more readily than do other germicides, and, while it is supposed to render the skin sterile, there are few references in the literature which fully substantiate this view. On the other hand, the official preparations possess certain drawbacks. Applied to delicate skins irritation is produced, leading to marked dermatitis in some patients. Owing to the tendency of the tincture to spread, the iodine becomes more concentrated at the periphery of the painted area and blistering sometimes takes place. In cases of hyperthyroidism, where a hypersensitiveness to iodine exists, the use of any solution or tincture containing free iodine is contraindicated. Furthermore, iodine is irritating to such delicate tissues as the peritoneum, and great care must be exercised to guard against any contact between the viscera and the painted edges of the wound in order that subsequent adhesions may be prevented.

Because of the objectionable features of both mercuric chloride and iodine, it was deemed desirable to study the applicability of some other germicide for skin disinfection. For several reasons the double salt of mercury and iodine—potassium-mercuric-iodide—seemed preferable to either of these agents. That it possesses high bactericidal potency has been shown by Macfarlan, while Watson reported that in alcoholic solution it was ten times as potent as similar solutions of iodine. It ranks with mercuric chloride in bactericidal efficiency and is superior to it in several other respects. It is readily soluble in water, alcohol, and acetone, and in its watery solution does not coagulate albumen. It is far less irritating to the tissues than either mercuric chloride or iodine, and is free from the escharotic action of the latter.

In a series of carefully conducted experiments they show that the application of germicidal solutions to the skin kills bacteria on the surface and many of the organisms in the skin follicles, but does not effect absolute sterilization of the skin.

The location of microörganisms in the hair or sebaceous follicles and in sweat ducts; the presence of fats in these follicles, preventing contact between the bacteria and the bactericide; and the fact that no chemical may be used in a concentration so great as to injure the tissue cells, are factors which militate against absolute sterilization of the skin. The results obtained, however, show conclusively that solutions of potassium-mercuric-iodide or tincture of iodine in dilutions free from any harmful action are efficacious in killing bacteria on and in the skin, and therefore must be considered as having a definite value in lessening the possibilities of bacterial infection in

surgical operations as well as in the treatment of traumatic wounds. These experiments also show that potassium-mercuric-iodide in a concentration of 1:100 in acetone or in 70-per-cent alcoholic solution is more efficient for this purpose than is the official tincture of iodine. The greater penetration of the potassium-mercuric-iodide in acetone and the more rapid evaporation of this solvent make this solution the most desirable one for use. Furthermore, solutions of this double iodide do not stain, and produce irritation or blistering of the skin. In these respects, therefore, potassium-mercuric-iodide in a strength of 1 per cent in 70-per-cent alcohol—or better, in acetone—is preferable to iodine for the disinfection of the skin.

LATE RESULTS IN CHRONIC GASTRIC ULCER.

SHERREN (*Lancet*, March 27, 1920) thus summarizes his gastric ulcer cases: Of the 310 cases, 220 have remained perfectly well for more than two years or died at a later date of other causes after having had no further gastric trouble. This is 75 per cent of those operated upon. These figures are not as good as those of chronic duodenal ulcer operated upon during the same period, but it must be remembered that they include cases treated by excision alone, which failed to relieve in six out of eight, and also posterior adherent ulcer, which he now treats by partial gastrectomy, and which were either relieved only or needed a second operation to bring to a successful issue, and are not included among the "cures."

As a result of his experience, he holds that while a gastrojejunostomy combined with general abdominal exploration and dealing with other diseased organs is curative in the majority of cases of chronic duodenal ulcer, each case must be studied, and those eroding the pancreas or spreading to the stomach must be removed. Gastric ulcers which have perforated and are adherent to neighboring organs, indurated ulcers on the lesser curvature, and all in which there is any suspicion of malignancy, must be treated by partial gastrectomy. Sherren believes that gastrojejunostomy for chronic gastric ulcer will become the less frequent operation. Symptoms arising later, if the correct procedure has been adopted, are due to mechanical or ulcerative changes in the region of the anastomosis, both prevented by careful technque, in the majority of cases, and becoming less frequent as individual experience ripens.

THE TREATMENT OF FLAIL AND STIFF JOINTS.

JONES (*New York Medical Journal*, March 20, 1920) observes that the flail joint may follow, (*a*) as a direct result of excision; (*b*) the removal of large comminuted masses of bone; (*c*) the direct loss of bone from missile; and (*d*) the extrusion of necrosed bone during sepsis.

The extent of excision should be strictly limited, subject only to conditions of safety. Extension applied should be very moderate. Ankylosis should be aimed at rather than mobility.

All muscular attachments should be spared. The tuberosities of the humerus; the nerve supply of the deltoid; the condylar attachments governing the elbow; the triceps expansion; the biceps insertion; the coronoid and, if possible, the whole or a portion of the olecranon should be preserved. One should endeavor also to retain as much width of the lower end of the humerus as is possible, in order to allow the surgeon to restore leverage later. If it is impossible to leave the important muscular attachments *in situ*, it may be possible to chisel off the portions of the bones to which the muscles are inserted, such as the olecranon, tubercle of radius, coronoid process, and the tuberosities of the humerus, and use them for reconstructive purposes later.

Extension applied to a joint, when necessary at all, should be of the very lightest kind and maintained for the shortest period possible. An abducted shoulder and a flexed elbow admit of excellent drainage,

but if treated in the dependent position purulent tracking down the muscular planes is permitted.

A proportion of flail joints are infected and discharging. Where it is possible they should be treated by excision of sinuses, scars, and infected bone. Whether operated on or not, the bone surfaces should be approximated and retained in the best functional position. A proportion of cases take in their slack and result in a much firmer pseudarthrosis or ankylose. The shoulder and elbow joints are most responsive to this treatment. Where all wounds are healed the joints should be placed in the functional position either by means of splint or plaster. The bones should be insinuated into juxtaposition to each other without crumpling the soft tissue between them. Absolute immobility must be maintained continuously for at least three months. If the muscles governing the joint retain power the after-treatment must be carefully conducted, only a few degrees of movement being allowed. The range of active movement may be increased gradually as the muscles regain their strength. If a pseudarthrosis of the shoulder joint is a bony or short fibrous one, the shoulder blade becomes the joint and the deltoid may be trained to lift the arm.

Pseudarthrosis of the elbow joint always results in considerable lateral instability. Attempts may be made at improving the stability by operation in cases in which the muscles governing the joints may be reasonably expected to recover strength. The operation consists of removal of intervening scar tissue, bringing the bone into contact and maintaining that position by means of an absorbable material.

Ankylosis of this joint is the only practical treatment, and if the bones are in good condition nothing is needed except to saw the ends and fix with screw or nail. If there is wide separation, however, and the ends have been associated with sinuses, union is not easily secured. In such a case it will be necessary in addition to bring a bulky sliding graft from tibia or femur and wedge it in at right angles to the line of the joint.

Jones advises the postural treatment for flail shoulder in cases in which the muscles are functioning. Abduction and careful muscle reëducation may result in a joint preferred by some people to an ankylosis. When the latter is chosen the glenoid should be gouged as deeply as possible, the base of the coracoid and the acromion chiseled, and the bony flaps left attached. The upper part of the humerus should be exposed and sawed through, and a groove made into the upper part of the shaft for the reception of the acromion. The humerus is pushed into the glenoid and the acromion sawed through and received into the groove prepared for it. The glenoid, humerus and the acromion should be fixed in contact by kangaroo tendon and placed into functional position.

There are two methods of treating flail elbow available: (*a*) non-operative, and (*b*) the operative. The non-operative consists of the approximation of the bone ends, counteracting the effect of gravity, and in muscle reëducation and development. It also often involves the wearing of apparatus. The operative treatment has one of two aims: (*a*) the formation of a bony ankylosis, or (*b*) the provision of a mobile arm with stability. The non-operative method is likely to be successful only where the bone ends are broad, giving the maximum surfaces of attachment. Where a larger apposition of raw surface is desired the bone ends may be split and in this way widened. The introduction of non-absorbable material is inadvisable, as the blood supply is usually poor.

The stiff joints following war wounds have to be approached with much greater care than stiffness due to prolonged immobilization of the joint, as latent sepsis is so often present in the neighborhood of healed war wounds. For instance, a fracture of the femur in prewar days, either simple or compound, retained in a Thomas splint, used to leave the knee-joint very stiff temporarily, and a fortnight of massage and

gentle treatment was sufficient to restore mobility. This is not the case in fractures we are dealing with now, for the rigidity is much more pronounced and requires a longer time to overcome. Recent improvements in the Thomas splint and the ice-tong extension make it quite unnecessary now to keep the knee immobile for months. Rigidity is sometimes so marked that surgeons have failed to make any impression on it by attempts at forcible movement—a procedure of doubtful wisdom. Such cases will often yield to the influence of gravity and gradual pressure.

When treating a stiff knee-joint a long posterior splint, bent to an angle of fifteen degrees, is applied firmly to the extended limb, the lower end of the splint and heel being kept unsupported. As the limb flexes, the angle of splint flexion may be gradually increased, but a few days' rest in the new position should be allowed to strained tissues before each increase in flexion is made. The power of voluntary full extension must be assured on each occasion. If the knee becomes firmly fixed in its new angle of flexion it is sufficient proof that this method of attack is premature or useless. A limited flexion can be recovered under anesthesia in certain cases. If the limb is immobilized for a week or so in the new position, a further flexion can often be secured under a second anesthetic.

These principles apply to all joints. When strong periarticular adhesions are thus stretched a certain transient degree of stiffness in the new position will occur, but after a short course of massage and voluntary effort this will disappear. The advantage of gradual stretching over rapid tearing is that hemorrhage and excessive inflammatory reaction are avoided; also instances have occurred where the patellar tendon has been torn, the patella fractured, and also where the quadriceps have been ruptured. Surgical intervention may be necessary in cases of: (*a*) muscular adhesions to bone; (*b*) scarring and shortening of capsule; (*c*) intra-articular adhesions due to arthritis or fracture; (*d*) fixed patella; and (*e*) bony ankylosis of femur and tibia.

When muscular adhesions interfere with flexion they are generally associated with the quadriceps. If the muscle is firmly bound down the rigidity of the knee is very marked. Force should never be applied to these joints, as it will only result in a lengthened or ruptured patellar ligament or even a compound fracture, suppuration in muscle sheaths, or osteomyelitis. Muscle must be freed from its adhesions by operation, and a living flap of fat or fascia placed between it and the bone. Muscle which is shortened through loss of structure must be elongated. The knee should be kept flexed during healing and the muscle freed from adhesions subjected to electrical stimulation.

The intra-articular adhesions are treated by gradual flexion with periods of rest. Severe pain with rise of temperature and effusion should warn us of trouble, but a little pain and some effusion need not interfere with the stretching.

If a sound knee is ankylosed with more than thirty degrees of flexion, it is unnecessary to straighten it. Marked degrees of flexion may require the removal of a wedge from the front of the knee-joint. A flexion of fifteen or twenty degrees gives the best functional result.

LOCALIZATION OR ELIMINATION OF CEREBRAL TUMORS BY VENTRICULOGRAPHY.

DANDY (*Surgery, Gynecology and Obstetrics*, April, 1920) has shown that the error in locating brain tumors is large; that their localization and their removal give the best promise of success; and that by an intelligent use of ventriculography few cerebral tumors will escape localization.

Each lateral ventricle occupies a large area in the interior of either cerebral hemisphere. It is evident that a tumor of any size situated in either cerebral hemisphere will modify the shape, size, and

position of the corresponding lateral ventricle. Quite frequently the lateral ventricle in the opposite hemisphere will be dislocated and its size also will be greatly modified. These changes in the ventricles, both homolateral and contralateral, yield many opportunities for locating brain tumors by ventriculography. Fortunately following the injection of air into one lateral ventricle, it is possible to obtain a roentgenogram of each lateral ventricle separately, and thus determine alterations produced by a tumor in either cerebral hemisphere. Owing to the angles of the ventricular system, it is possible to fill only one lateral ventricle with air when the head is in a given position. After a roentgenogram has been taken, the head must be carefully turned in such a manner that the air can pass the various ventricular angles and the interventricular foramina (of Monro) and the third ventricle, and thus reach the opposite lateral ventricle. After a lateral view of each ventricle has been photographed, the head should again be carefully turned in order to direct the air into the anterior horns of both lateral ventricles; the occiput will then be on the plate and the roentgenogram will give the size, shape, and position of the anterior part of both lateral ventricles. Then by placing the forehead on the plate, the size and position of the body, and of the posterior and descending horns, can be demonstrated. It would seem that most tumors must give some manifestations of their presence in one of these views, and the findings must therefore absolutely indicate the position of the tumor.

To introduce air into the ventricles of an adult, it is of course necessary to make an opening in the skull. This can be done either under local or general anesthesia, the choice largely depending upon the patient. The procedure need be but slightly painful, and after transferring the patient to the *x*-ray room his coöperation eliminates respiratory movements and allows a much better exposure.

In some cases it will be found that the size of the ventricle has been so reduced that it is impossible to withdraw sufficient fluid to make the injection of air a safe procedure. It is then best to make a ventricular puncture on the opposite side and inject air into this ventricle, though occasionally both ventricles are too small. Not infrequently we can localize a tumor merely by the diffence in size of the two lateral ventricles as determined by the ventricular puncture, or often by the abnormal position at which either ventricle may be reached. In a general way a very small ventricle is presumptive though of course not absolute evidence of a cerebral as against a cerebellar tumor or a tumor of the brain stem; when there is a difference in the size of the two lateral ventricles the tumor is usually on the side of the smallest ventricle.

The author concludes that ventriculography is invaluable in the localization of obscure brain tumors. So-called unlocalizable tumors comprise at present over half of the total number.

Practically all brain tumors either directly or indirectly affect some part of the ventricular system.

Hydrocephalus is easily demonstrable by ventriculography, and when present usually though not always restricts the localization of the tumor to the posterior cranial fossa —that is, the brain stem or the cerebellum.

Local changes in the size, shape, and position of one or both ventricles as shown by the ventriculogram will accurately localize most obscure tumors of either cerebral hemisphere.

Every effort should be made to localize the tumors before resorting to any operative procedure.

The usual subtemporal decompression is useless and dangerous when a hydrocephalus is present—that is, when the tumor is in the brain stem or cerebellum.

A suboccipital decompression (cerebellar operation) is extremely dangerous when the lesion is in the cerebral hemispheres.

To differentiate between cerebral and cerebellar lesions is frequently one of the most difficult tasks in intracranial localization. Ventriculography at once separates

these two groups and indicates the operation of choice. The only cure for brain tumor is extirpation. The results, in terms of complete cures of brain tumors, will be in proportion to the early localizations which are made. A decompression is a purely palliative procedure and should be adopted only when the tumor cannot be located. Ventriculography permits of an early and accurate localization of the growth when all other methods fail.

It is possible to get a separate profile ventriculogram of the whole of each lateral ventricle. Any change in size or contour is easily demonstrated. Anteroposterior views will show the same points in cross-section, but they are chiefly useful in showing any lateral dislocation of the ventricles.

The results in localization of five types of cases of brain tumor are shown with ventriculograms. In all but one of these the ventriculogram was the only means by which a positive localization could be made. One tumor occluded a lateral ventricle and dislocated both lateral ventricles. Another tumor altered the size and shape of one lateral ventricle. In a third case a cerebral tumor, suspected, was eliminated by the hydrocephalus. In a fourth case a unilateral hydrocephalus was demonstrated.

Ventriculography is also useful in precisely localizing the growth. This permits of an exploration directly over the tumor and greatly simplifies the operative procedure.

Many useless and harmful operations will be spared the patient by a judicious use of ventriculography.

Doubtless the type of tumor will often be indicated by the ventriculogram. Such knowledge will be useful in prognosis and in determining whether radical or palliative operative treatment should be instituted. These determinations will result from accumulated experience in the interpretation of the ventriculograms together with the correlative operative findings presented in a large series of cases.

With experience and care in the use of ventriculography, the author believes few tumors will escape accurate localization.

A NEW SKIN SUTURE MATERIAL.

OCHSNER, EDWARD H. (*Illinois Medical Journal*, April, 1920), after pointing out the objectionable features of all suture materials hitherto used, states that in his own personal work horsehair has given him the best results so far as permitting scar formation is concerned.

The principal causes of scar formation following operations are infection, necrosis, chemical irritation, and liquefaction of the suture material used. In clean operations the first, namely, infection, can and should be avoided in practically every instance, no matter which one of the suture materials or devices is employed. Necrosis can also be avoided in nearly every case with the ordinary suture material; however, if the skin is very delicate, the more rigid suture materials, such as silkworm-gut and silver wire, will sometimes cause local necrosis and should not be used in such instances. When the above two causes of irritation are excluded a skin coaptation suture causes local irritation only because of two other conditions: first, whenever there is some chemical irritation, and second, whenever the suture material is absorbable, that is, can be attacked by the cells of the body.

The one great advantage horsehair has over all other skin sutures is that the chitinous covering of the horsehair is a substance which the cells of the body cannot attack. As a consequence, there is no rush of leucocytes to the suture point, no hyperemia, and no liquefaction. Other things being equal, the more readily absorbable a skin suture material is the more reaction, the more liquefaction, and the more scar formation.

A suture material Ochsner has found which would suit all requirements is called "Equisetene," which means horsehair substitute. This suture material is made by treating silk chemically so that the tissue cells cannot penetrate the meshes of the silk. In addition, it renders the silk smoother, a little stiffer, with less of a tendency to snarl —in fact, overcomes all of the objections to silk as a coaptation suture without robbing it of any of its desirable qualities.

The suture material is put up in two sizes: the fine, which is colored a jet-black, is about one-half as thick as average horsehair, with more than three times the average tensile strength of the best horsehair.

The three great advantages over horsehair are that it is much stronger than the latter, is of uniform strength, and can be cut in any length desired. A bright surgical nurse by looking at the wound can determine at a glance the length required. By first making a tension stitch which catches the skin, superficial fascia and deep fascia, all dead spaces are obliterated and the coaptation stitches are relieved of practically all tension. The No. 2 is manufactured in a grayish-black color so that it can be distinguished from the No. 1 without the necessity of its being handled. This has a tensile strength of 2500 grammes, can be used as a silkworm-gut substitute, and will be welcomed by those who are partial to the subcuticular stitch. It is not quite as stiff as silkworm-gut and yet not as pliable as silk; it pulls through the tissues very smoothly and easily. As the ends do not stick into the skin it is particularly adapted for operations about the natural orifices, such as perineorrhaphies and operations about the mouth, nose, and eyes.

The material is put on small wooden slats, each slat containing 30 feet of one variety of the suture material.

THE PROBLEM OF THE DIPHTHERIA THROAT IN CONVALESCENTS.

Brownlie (*Lancet*, March 27, 1920) notes that there is no more difficult and unsatisfactory problem to be dealt with in fever practice than that of the diphtheria carrier.

The very multiplicity of the so-called cures is an admission of their comparative worthlessness. At various times the following amongst many others have been pressed into service as curative agents: carbolized glycerin of varying concentrations, formaldehyde, chloramine-T, flavine, urea, papayotin, lozenges, insufflations of powdered serum, toxin-antitoxin, vaccine-antitoxin, endotoxin; media containing bacilli killed in one case by exposure to chloroform, in another pulverized at the temperature of liquid air, and in a third extracted by ethylene-diamine and submitted to further tedious processes. It must be conceded that it would be difficult to furnish a better example of scientific ingenuity than the foregoing.

The idea of using a vaccine of the offending organism itself appealed to the writer, and was forthwith put in practice, quite independently of the knowledge of its previous tentative employment. Forty-three consecutive cases had been successfully treated when interest was sufficiently aroused in the matter to consult the literature on the subject. Nowhere did claim appear to be made either for such uniformity of results or for such a large consecutive number.

The vaccine used was made in the usual way, and was not autogenous. After a considerable number of patients had been dealt with it was realized that the diphtheria bacilli in each case did not behave uniformly in the presence of vaccine.

The vaccine was clearly capable of instituting well-defined involution formation, with subsequent dissolution, in the bodies of diphtheria bacilli with which it was brought into contact. Many of the involution forms were comparable with those known to be producible by alteration in optimum growing conditions.

The series occurred in the ordinary course of practice in an isolation hospital. There was no selection. No accessory treatments were at any time employed. It was concluded that the persistence of the B. diphtheriæ was due to one or other or any combination of the following five circumstances: (1) Innate lack of resistance of the hosts—mainly contributed to by the presence of a concurrent resistance-lowering condition, such as pneumonia. (2) Spread by continuity of tissue—causing infection of any of the accessory nasal or pharyngeal passages. (3) Severity of the nasal or pharyngeal involvement. (4) Severity of the original local involvement. (5) Indi-

vidual tolerance or natural predisposition —carriers or those with bad fever histories.

The series of carriers was made up of 22 males and 28 females. Taken in conjunction with the age-incidence, such a proportion was not at variance with that obtaining in diphtheria itself. No proof, then, was forthcoming that sex, *per se*, exerted any particular predetermining influence.

With regard to age, it was not found that persistence of the B. diphtheriæ in convalescence was liable to affect disproportionately those at one time of life more than at another.

In many of the cases the diphtheric attack had followed closely a previous measles or pertussis. In fact, the former infection was frequently a convalescent sequel of the latter. The very lack of resistance which predisposed to the diphtheric infection presumably militated against the early dispersal of the invading bacilli. It appeared that mucous membrane damaged by the inflammations accompanying such fevers as measles and pertussis, especially when further violated by diphtheric toxin absorption, formed a very suitable locale for the perpetuation of the B. diphtheriæ; 74 per cent had been, in the more or less immediate past, the subjects of just such damaging influences as produced indifference to the presence of an organism which readily assumed saprophytic propensities.

The vaccine was reserved for such patients as had been in residence for unduly prolonged periods. This was done deliberately, as most positive throats clear up sooner or later without interference. The successful application of the vaccine during the earlier periods of convalescence might have been inconclusive, since it was open to argument that the organisms were disappearing in any case, and that it was fallacious to credit the vaccine with their removal.

It could not readily be assumed that in 50 consecutive cases, treated over periods ranging from the third to the twentieth week, mere coincidence offered sufficient explanation.

A table is given showing that by vaccinating every fourth day 44 of the cases, having received at most three doses, could have been dismissed with two consecutive "negatives" on the eleventh day. The time consumed in attaining his object varied within considerable limits—namely, 1 to 44 days.

Thirty-seven cleared up within a week, seven within a fortnight, whilst only six took longer. It may fairly be accepted that, so far as the time factor was concerned, vaccine treatment of "positive" throats was unassailable by comparison with any of the other means advocated. On account of the exigencies of the situation, nearly three-fourths of the patients were dismissed within a week of the completion of treatment, as it was impracticable to retain large numbers for observation purposes. Fully one-fourth, however, remained for from 8 to 27 days without manifesting renewed "positivity" or sustaining reinfection, and this in spite of the fact that there was no segregation nor attempt at protection, as all remained in a receiving ward, liable at any time to the incursion of acute and virulent cases. If there had been any liability to reinfection every facility was offered.

No untoward effects were noted on the vaccinated patients. Pulse-rates were moderately increased for a few hours, the respiratory rate was mostly unaffected, pyrexia and local pain or stiffness were quite exceptional.

Vaccine treatment of the positive throat in diphtheria, when judged by a money-saving standard, was of considerable value. By a comparative estimate of averages, it was computed that the term of residence of a carrier was longer by four weeks than that of the non-carrier.

The author's conclusions were as follows:

Local antiseptic throat applications are unreliable cures for the carrier and the positive throat.

Diphtheria vaccine produces well-defined degeneracy in morphological appearance of the cultured organism, followed by its complete dispersal from the locality invaded.

In the past the diphtheria carrier has been

subjected to hospital residence for weeks, perhaps months, which were avoidable.

Diphtheria vaccine is effective in the treatment of the positive throat of diphtheria convalescents, and its use is administratively and economically sound.

NEW ARSENICAL COMPOUND IN THE TREATMENT OF SYPHILIS.

WRIGHT, KENNELL and HUSSEY (*Medical Record*, April 10, 1920) believe that they have found in disodium monoethylarsone, with an arsenic content of 38 per cent, a comparatively non-toxic and efficient drug. This being an alipathic compound should be stable. By the introduction of the ethyl group the authors believe that not only would toxicity be reduced, but that surprising differences in chemical and pharmacological activity would be observed, in accordance with the fact that in homologous series of compounds wide differences are observed between the methyl and ethyl compounds, although otherwise such series maintain their homologous characteristics.

Monarsone is a pure white, somewhat crystalline powder. In air it deliquesces with the absorption of moisture but does not oxidize. It has no odor, a salty taste, and is extremely soluble in cold or hot water. Its solution is colorless and when properly stoppered is perfectly stable, and may be kept without decomposition for long periods of time. These solutions may be boiled or autoclaved without alteration.

With varying amounts of water it forms a series of semicrystalline hydrates, which are decomosed by desiccation in a vacuum, yielding the anhydrous salt.

To determine its toxicity experiments were conducted upon 32 healthy rabbits, all of which were injected finally with an amount of the compound equivalent to four grammes based upon a man of a hundred and fifty pounds' weight, and reduced proportionately to the body weights of the animals used.

Not a single death or observable reaction occurred in any of the animals, which were later killed, and at necropsy there was in no case any evidence of pathological conditions found, especial attention being paid to the kidneys, heart, liver and meninges.

Examination of the rabbits' urine failed to show the presence of albumin or red blood cells.

The authors of the quoted paper have been using in clinical practice 2.4 grammes in 12 Cc. of sterile water at blood temperature once every seven days. There were no reactions or sign of arsenic intolerance.

They believe they have demonstrated that the standard laid down by them for an ideal arsenical compound in the beginning of this paper has been fulfilled in monarsone. It is decidedly less toxic than the arsphenamine compounds as evidenced by the fact that .06 gramme of arsphenamine, containing 186 milligrammes of arsenic (2.8 grains), the maximum dose of this drug, frequently produces distressing and sometimes fatal reactions, while monarsone, in 2.4 gramme doses, containing 1.064 gramme arsenic (16.7 grains), has failed to produce a reaction or a toxic symptom of any description.

Monarsone is perfectly soluble in small amounts of hot or cold water and may be administered in solutions in which each Cc. represents 200 milligrammes of the dissolved solid without the slightest danger. Its singular property of having no hemolytic action upon the red blood-corpuscles in this heavy concentration makes such a concentration unobjectionable.

It requires no special apparatus for its administration.

It contains approximately seven per cent more arsenic than arsphenamine.

The solutions of monarsone are so stable that they completely resist oxidation or decomposition when boiled or subjected to the higher temperatures and pressures of the autoclave.

While monarsone is designed to be administered intravenously, accidental extravasation from the vein need not be feared, for from premeditated subcutaneous injections of this drug and from several accidental leakages from out the vein no untoward results have been noticed.

These manifest advantages make it possible for any well-qualified physician to administer this treatment as a routine office or bedside procedure, and render it possible for the naval and army surgeon to have this desired therapeutic agent at his command at all times, whether at sea or in the field.

Monarsone has passed all the requirements demanded for arsenicals by the Public Health Service, having successfully met the established tests prescribed, and is made in the Hygienic Laboratory, Washington, D. C.

RESULTS OF CHOLECYSTECTOMY.

DENNIS (*Minnesota Medicine,* Vol. III, No. 4, 1920) on the basis of twenty-six cases without gall-bladder stones, reports to the effect that after cholecystectomy gas and distress after eating were relieved almost completely, or completely, in twenty of the cases; half as bad as they were before in three; in three no relief at all. Eighteen of these cases gained in weight an average of thirteen pounds; in five there was no change in weight; in two there was a loss, in one instance of twenty-five pounds. Twenty-two of the cases have declared themselves either perfectly well or very much better.

Of twenty-one cases that had stone at the time of operation the ultimate results were about the same as noted in the first group without stone.

There were two deaths in 64 cases, one from pneumonia, the other from ruptured gall-bladder with stones and pus scattered through the peritoneal cavity. In two cases hernia followed operation, both being cases of acute empyema of the gall-bladder. There was no mortality among the cases of uncomplicated cholecystectomy, nor did hernia result in any of them.

The author notes that there is one condition, however, following the simple operation as well as those with stones and complications, which undoubtedly is a large factor in accounting for incomplete relief from symptoms, and this is postoperative adhesions. If the pyloric end of the stomach becomes fixed in scar tissue gas distress after heavy meals is likely to result. This is the cause of complaint with four of the cases with stone, and of two without stones. The best preventive measure is the fixation of a layer of omentum between the cigarette drains and the stomach, and this is a matter of prime importance.

There is one other source of unsatisfactory results following cholecystectomy—incorrect or incomplete diagnosis. This error is most likely to be made in some cases of ptosis. The dyspeptic symptoms of ptosis are quite different from those of cholecystitis, and the *x*-ray is definite for the former, but even if a ptotic case has also a chronic cholecystitis it should ordinarily be left alone, since cholecystectomy cannot relieve more than a fraction of the pathology.

The lesson which was learned in connection with appendectomy in this class of cases applies with even more force in the case of cholecystectomy.

THE PREVENTION AND DESTRUCTION OF RATS.

DEWBERRY (*Journal of the Royal Army Medical Corps,* April, 1920) states that it is well known that rats play an important rôle in the dissemination of the germs of disease, such as plague (spread to man by fleas which infest these rodents). They are also responsible for transmitting and perpetuating trichinosis, certain tapeworms, and other parasites, also the spirochætosis icterohemorrhagica and sokodu, or rat-bite fever, and the spirochæte of infectious jaundice. Moreover, there is some reason to suppose that their excreta poison food, and their destructive powers and habits are well known. It is estimated that one rat causes by the destruction of food material on an average about seven shillings and sixpence a year, amounting in Great Britain and Ireland to about $2 per annum. The rat-catchers of London under the port authority killed over a million during last year. The black rat has been described by

the ancient Greeks as associated with the outbreaks of plague. It is this animal which is in the main the plague carrier. The brown rat is larger and stronger, and in cool climates usually exterminates the black. It is said that one pair of rats in nine months give rise to a progeny of 800. The period of gestation is about twenty-one days. The animals sexually mature when less than three months old. At times when food is short or when in search of change of food, they migrate in vast numbers during the night; this also frequently happens when disease has attacked some of their numbers. When persistently hunted, these rodents forsake their abode, and migrate to a more favorable situation. The author states that rats will eat through lead pipes to reach either water or fat. Seventy-five per cent of the rat invasion in houses or towns is due to defective drains.

Measures taken for the destruction of rats should be carried out simultaneously over a wide area, and reliance should not be placed on any one method. Extermination is practically impossible as rats readily migrate, and the most that can he hoped from measures against rats is some reduction in their numbers. It should be recognized that the existence of these vermin is strictly dependent upon the food they are able to procure, and that they will not remain or increase in places where such cannot easily be obtained.

The active poisoning agent in most preparations sold for exterminating rats is usually one of the following: Arsenic, phosphorus, strychnine, squills, barium carbonate, and plaster of Paris. Poisoning should be carried out over a large area once or twice during the year—*i. e.*, in the spring and in the late autumn. To insure success the following preliminary measures should be adopted: As large an area as possible should be covered at one bait-setting, and a careful survey made beforehand in order to have a sufficient supply of bait to lay down over the whole area simultaneously. One hour should be sufficient time for bait-laying. The next day another survey should be made and all the remaining baits collected and counted. It is no good laying down poison in the same area more than twice a year, and it should be followed up by trapping. Sometimes it is advantageous to bait without the actual poison for two or three nights, in order to entice the rats. In this case the number of baits laid down should be counted, and also those remaining the next morning, so as to be able to ascertain the actual amount of bait required, and where to lay the poison. If it is found necessary to repeat the poisoning, an interval of at least ten days should be allowed to elapse. Poisonous baits should be laid well within the burrows, as there is always the chance of a rat carrying one off, and depositing it in an exposed position, to be afterwards devoured, perhaps, by a domestic animal.

The amount laid in each burrow, or rat hole, should be as small as possible in order to attain the desired result. It should be borne in mind that baits used for rats should always be of a different nature from the food they usually obtain. A change of bait is certain to be of considerable value, and when it is found desirable to lay down the poison a second time a different bait should be used. The bait should be as fresh as possible, as the vermin consume it more readily; if it is kept too long, the toxic properties may become weakened. It must be remembered that rats, especially old ones, are very suspicious animals, and if one of their number die from eating some particular kind of food, they will not go near that food for some time, unless it is artfully concealed and judiciously placed; this no doubt accounts for the use of poison not always being attended with success, although large quantities of bait have been laid down. The putrefying body of the rat must be found, and it has been suggested that the following method be used in warm weather to detect the whereabouts of the dead rat: A number of blow-flies are carefully caught without injury, and let loose in the room from whence the bad odor arises, taking care to close all windows and doors. After a time it will be found that the flies have a tendency to buzz

round one particular spot, and this is probably the one where the dead body of the rat will be eventually found.

Of the various substances used for poisoning barium carbonate is the favorite This is a very safe and efficient rat poison; it is tasteless and odorless when conveyed in a proper medium, and has a corrosive action on the mucous lining of the stomach, causing thirst, thus inducing the vermin to seek water (which should be supplied for their use) in the open, where they die. In small doses barium carbonate is harmless to the larger domestic animals, but baits should not be placed where cats, dogs or poultry can obtain access to them. The bait can be prepared as follows:

(1) Barium carbonate, 1 part;
Meal, 4 parts;
Water, a sufficient quantity to make a stiff dough.

(2) Mr. Read's Formula—
Barium carbonate, 6 ounces;
Flour, meal, etc., 16 ounces;
Salt, ½ ounce;
Butter, lard, etc., sufficient only to bind the mixture.

The above quantity is sufficient for 1,000 baits.

Knead into a dough, roll out and cut into half-inch cubes. Barium carbonate may also be used in a dry form with meal, etc., in the proportions of one part to eight parts of meal, or spread on fish, or moist toasted cheese.

The diluted extract of squills (sea onion) has now been added to the already large number of rat poisons, and it has an apparent action on the heart of the rodent.

A well-known Continental way of destroying rodents is to bake a pancake-egg (pancake not essential, but beef-dripping advisable) to which twenty per cent of finely-chopped Scilla maritimus, red variety, is added, either to the batter before frying, which is simpler, or placed between two layers of pancake after frying. When cold, the pancake should be cut in pieces of about an inch square and laid in the rat runs or holes. Rats are particularly susceptible to the effect of Scilla ar. (squills).

A METHOD FOR THE REMOVAL OF EXTENSIVE DISEASE OF THE ALVEOLAR PROCESSES.

DUNN (*Minnesota Medicine*, May, 1920) reports a number of suggestive cases in which betterment occurred after the removal of focal infection. Deductions from clinical experiments are notoriously fallacious. Several methods of therapy are usually applied simultaneously and sufficient credit is not allotted to rest, change of scene, and better hygiene.

In his efforts to determine the value of the removal of infections as a therapeutic procedure he has endeavored to stabilize environmental and other therapeutic conditions before attacking the focus. He has tried to determine the norm of the patient under the conditions of the experiment before the experiment was carried out. The patients have nearly always been subjected for a time to a fixed hospital régime before operation. The technique of the clinical experiment is another variable that must be accurately controlled. For a satisfactory experiment the technique must be adequate. The technique of tonsillectomy has been perfected. Those of nasal and buccal infections are yet deficient. Dr. Dunn presents as a corollary to this paper a technique that fulfils the demands of a satisfactory experiment for the removal of alveolar infection.

This technique of external alveolectomy was applied by the author fourteen years ago to the superior maxilla for cosmetic purposes, because it facilitated the fitting of pleasing dentures in cases in which the upper jaw was unduly prominent. In attempts at removal of infection with a curette, the author was impressed with the uncertainty of the "working in the dark" and with the prolonged suppuration and retarded healing of the curetted sockets. Removal of the external alveolar plate after thorough curettement convinced him of the improbability of complete removal of extensive infections by the curette. Therefore the operation of alveolectomy was applied as a routine procedure in extensive infections of the alveolar processes. The

teeth are removed, the muco-periosteum is dissected up to the root ends of the teeth, the external alveolar plate is taken off, then the diseased tissue is attended to under the eye, the bone smoothed down, and the lingual and buccal gingival mucosa trimmed and sutured with horse-hair. Healing, much to the writer's surprise, has been almost entirely by primary union, febrile reactions have been practically eliminated, and the greater comfort of the patients following this procedure has been almost unbelievable. Furthermore, the technique permits of the clearing up of an entire alveolar process at one sitting without fear of postoperative reaction.

The conclusions he reaches are that the principle of focal infection is usable in the treatment of neurasthenia, fag, hypertension, and vertigo. Alveolectomy is the operation of choice for removal of extensive disease of the alveolar processes. The technique is adaptable to partial removals.

CRANIAL SINUS THROMBOSIS IN CHILDREN.

OPPENHEIMER *(Archives of Pediatrics,* February, 1920*)* after allusion to marasmic sinus thrombosis, the diagnosis of which is obscure, the symptoms being those of meningeal or cortical irritation, takes up the subject of secondary inflammatory infections. This he regards as almost as frequent in children as in adults. It generally affects one of the dural sinuses, is local in origin, secondary to some inflammatory lesion of infective character, and occurs in the sinus nearest the seat of primary disease. It is often associated in its later stages with meningitis and not infrequently with small cerebral or cerebellar abscesses. Aside from traumatism, epidemic cerebral meningitis, and tubercular meningitis, the majority of cases of intracranial affections take origin in the ear. The accessory sinuses are accountable for only a small percentage of such infections. Sinus thrombosis is commoner in males than in females, and more often found on the right side. This may be due to the fact that the right sinus is larger and approximates the mastoid cavity more closely.

The symptoms of lateral sinus thrombosis are fairly constant, although in children they may be much masked by the presence of some underlying acute infectious disease. Temperature is the most important general symptom, and young children particularly are likely to have rises which are excessively high. The mere presence of a high temperature in children is a less important indication for operation than in adults, but when its presence is persistent in conjunction with an acute mastoiditis, and a pyelitis, a pneumonia, or an influenza can be excluded, operation is justified even although a blood examination fails to show a bacteremia. An important point in a case under suspicion is the taking of two-hour temperatures in order to accurately note the varying oscillations. Typical cases occasionally present themselves where the temperature remains steadily high without much remission. In older children there may be headache, pains in the occipital region, and tenderness upon palpation along the jugular vein, due to lymph-node enlargement, may be present. A diagnostic sign of importance is a unilateral enlargement of the lymph nodes at the junction of the facial vein with the internal jugular.

Nasal hemorrhage is frequent, due to the fact that the venous blood from the nasal passages is discharged into the superior longitudinal sinus, and the stasis of the nevous circulation in the nose caused by obstruction of the sinus leads to hemorrhage. From the same cause, veins passing in from the anterior fontanelle to the temples and auricles may be dilated and prominent. Drowsiness is a general accompaniment of an acute infectious process, but a state of well-being (euphoria), so frequently seen is ofttimes very deceptive and is apt to throw one off his guard.

Dilatation of the cervical veins and the possible hardening of the internal jugular vein, with or without edema behind the mastoid process, suggest invasion of the

lateral sinus. A sign of much diagnostic significance is the presence of a postmastoidal edema, indicating a blocking of the mastoid emissary vein. These local signs cannot be relied upon alone as a means of diagnosis, but their close association with a more definite symptomatology places upon them some dependable value.

Fundus examinations may show a neuroretinitis in some cases. Crowe of Baltimore lays some stress from the diagnostic standpoint on being able to produce choked disk by compression of the internal jugular vein.

Blood examination furnishes reliable data in many cases. In the early stages of thrombosis the blood shows as a rule an increase in the number of white cells. The increase is rarely over 20,000. When the thrombus is infected or suppurating, a bacteremia may be demonstrated by blood culture, but in many cases a clinical diagnosis may be positively made before a positive blood culture can be obtained.

In an experience dealing with approximately 150 cases of sinus thrombosis, the author has never observed an infection due to any organism other than the streptococcus or the streptococcus mucosus. This point has proven in many instances of great value in the expression of an opinion, and shows the importance of a culture from the pus contained in the mastoid process at the time of operation.

The prognosis of sinus thrombosis in children depends upon the duration and extent of the disease and upon the stage at which its progress is checked by surgical interference. The earlier the operation the lower the mortality. A localized thrombosis of short duration, located in the sigmoid region and therefore unaccompanied by involvement of the petrosal sinuses or the jugular bulb, when promptly operated upon, usually results in recovery; during the later stages, after the thrombus has invaded the tributary vessels, the torcular, the bulb, or jugular vein, the prognosis is less favorable. After metastatic processes have developed in the lungs, brain, joints, or heart, the mortality is extremely high.

The treatment of sinus thrombosis of otitic origin is entirely surgical. Where it has not already been done, the mastoid operation should be performed with due regard to the differences of the anatomy of the parts in the child as compared with that of the adult. The sigmoid sinus should be exposed along its lateral mastoid portion and the wall of the vessel incised, compression of the vessel wall being made above and below the point of incision. A wire ring curette is then passed into the lumen of the vessel through the incision, and an attempt is made to remove the clot both from the torcular and bulbar ends. Free bleeding should be established from both directions, after which the outer wall of the exposed sinus should be excised and compression plugs placed above and below to control the hemorrhage.

SPINAL ANALGESIA.

HALSTEAD (*International Journal of Surgery*, April, 1920) notes that of prime importance is the proper point of puncture. The lowest extremity of the spinal cord is approximately opposite the second lumbar vertebra. Below the fourth lumbar the insertion of a needle becomes increasingly difficult because of the configuration of the spine. Quincke accordingly recommended that the puncture be made between the second and third or third and fourth vertebræ. Halstead nearly always uses the latter location because of the readiness with which it is found by drawing a line between the crests of the ilia. This line passes over the fourth lumbar spinous process, and just above it he inserts the needle.

Many clinicians recommend that the puncture be made in the midline. Halstead prefers, however, to enter the needle one-half to one centimeter to one side of the median line, as originally proposed by Quincke, in order to avoid going through the tough ligamentum interspinosum.

The needle, once inserted into the skin just outside the midline, is pushed inward (slightly upward in adults, horizontally in

children) and medianward. The dura is reached at a depth of four to six centimeters in adults, or of two centimeters in a two-year-old child. If the tip of the needle engages bone at the first attempt, withdraw a little, change the direction, and try again.

When the dura is punctured the liquor spinalis flows out in rapid drops, and assures us that the needle is actually in the dural sac. If the flow is very sluggish the needle should be turned about on its axis. In no case should injection be made when the flow is not free, for it probably indicates that the opening in the needle is only partially through the dura and the solution will be lost in the extra-dural space, with resulting failure in obtaining analgesia.

When two or three cubic centimeters of the spinal fluid have escaped, the syringe containing the anesthetic solution is attached to the needle and its contents slowly emptied into the dural sac. The needle is then quickly withdrawn and the puncture wound covered with a small plaster of cotton and collodion.

After experimenting with various preparations, Halstead has adopted for routine purposes a two-per-cent solution of beta-eucaine, or a two-per-cent apothesine, in distilled water. The quantity employed varies according to the weight of the individual. In persons of small stature, 18 minims are injected; in large individuals, 20 to 22 minims. These drugs possess the combined qualities of safety, rapidity of action, and uniformity of results.

Usually after the lapse of from two to ten minutes following the injection the patient first notices a sensation of formication in the feet that is soon followed by numbness. The perineum then becomes analgesic, followed by the inguinal region and the lower abdomen. The height of the anesthetic level depends upon the specific gravity of the solution injected and the posture of the patient. The analgesia produced is complete, lasting in the average individual about one hour and a half.

The indications for the use of spinal analgesia are in general:

Those cases in which for any reason a general anesthetic is not considered safe—*e.g.*, in intestinal obstruction with fecal vomiting. In general peritonitis, for the same reasons. Also in strangulated hernias, and in operations in old people, such as prostatectomy.

In traumatic surgery of the lower extremities, in crushing injuries. The solution injected into the spinal canal not alone produces analgesia, but in doing so blocks the sensory tracts of the cord and lessens shock.

In disarticulations of the hip or in high amputations for conditions not depending upon trauma. These operations can be carried out with much less shock than if a general anesthetic is employed.

PROBLEMS CONCERNING URINARY CALCULI.

KEYES (*International Journal of Surgery*, April, 1920) thus summarizes the accepted teachings on this subject:

Urate stones are more frequent in the bladder; oxalates in the kidney. Both probably form in the kidney pelvis, but the rough oxalate stone is retained there, while the smooth ureter stone may pass unnoticed to bladder. The passage of renal calculi through the ureter may be wholly silent. Ureteral colics are comparable to the cramp in the leg of a swimmer and probably are not helpful. Operation for ureteral stone is indicated by: Alarming symptoms; stone not progressing; stone more than 0.5 cm. in diameter. The shape of the calculus rather than its size determines its passage down the ureter.

The rules for operating on bilateral stones are as follows:

Operate first on the kidney with the better function. This is usually the kidney giving painful symptoms. Impaction of stone in the ureter may temporarily reduce its function below that of its fellow. Simultaneous bilateral operation is sometimes

practicable. In emergency, provide drainage, preferably by pyelotomy, which in case of anuria should always be bilateral. Search for stones later.

Geraghty's formula of deficient kidney function is helpful.

Two hundred and thirty-nine cases studied showed 25 per cent bilateral renal calculi, 4 per cent calculi in both bladder and kidney. Only 28 per cent of calculi cases passed all of their stones; 10 per cent were arrested in the bladder or urethra, more than one-third in the kidney pelvis, and less than one-third in the ureter. If the urinary tract is clear after the passage of the first calculus, subsequent ones forming in that kidney will presumably pass. Silent stones may last a long lifetime, and their removal is dangerous if they have grown so large that nephrectomy is required.

Single kidney is no contraindication to removal of calculi.

REVIEWS.

A Dictionary of Treatment, Including Medical and Surgical Therapeutics. By Sir William Whitla, M.D., LL.D., M.P. Sixth edition. Chicago Medical Book Company, Chicago, 1920. Price $7.50.

The first edition of Whitla's Dictionary of Treatment appeared in December, 1891. It is not arranged from the standpoint of drugs, but from the standpoint of diseases; in other words, the arrangement is that of a book upon the Practice of Medicine, with etiology, pathology, and symptomatology left out. The first article deals with gunshot wounds of the abdomen and is followed by one upon abortion, and the last article deals with yellow fever. Numerous prescriptions are scattered through the text. Other authors are frequently quoted, but the publications in which their statements have appeared are not given; in other words, there is no bibliography except in rare instances.

As the book covers both medical and surgical therapeutics it has a wide scope and naturally cannot attempt to completely fill the field, so that a more correct title would be medical and minor surgical therapeutics. Probably greater confidence can be placed in the medical recommendations than in the surgical ones, because for many years Whitla was the Professor of Materia Medica and Therapeutics in Queen's University, Belfast. He has been wise enough in the present edition to call to his assistance several surgeons to revise the articles dealing with their respective branches of surgery.

As Sir William is now no longer a teacher but a Member of Parliament, he tells us that if typographical errors are found in this edition they are due to the fact that he had to read the proof sheets in the library or lobbies at Westminster during the intervals of debate.

As Whitla's Dictionary of Treatment has from the first been one of the standard books in the English language dealing with this subject, its popularity will doubtless continue in its present revision.

Neither Dead Nor Sleeping. By May Wright Sewall, with an introduction by Booth Tarkington. The Bobbs-Merrill Company, Indianapolis, 1920.

This book is not, of course, a definite medical publication, but its notice in our columns is justified by the facts that it approaches the border-line of medicine, that it may fall into the hands of the patients of some of our readers, and that they will like to be informed concerning it.

The Dedication begins as follows: "To all honest souls who have hitherto believed the grave to be a chasm and who would be comforted to know that it is a gate that swings both ways and can be unlocked by

humans on both sides of it—to such I speak." This is rather a mixed metaphor. The real dedication of the book, however, reads as follows: "To hearts that swell with rapture in the present enjoyment of the Beloved or ache with longing for the Absent," etc., etc., "this book is inscribed by the author." The Publishers' letter which accompanies the book states that twenty-five years ago the authoress first began to have her very unusual psychical experiences. Being critically ill with Bright's disease she refused medicine and aid of all kinds, and left herself entirely in the care of those on the other side, who gave her daily suggestions for treatment which she followed without deviation for over a year. At that time she was pronounced cured by the same physicians who told her a year earlier that there was no cure for her disease!

DIE THERAPIE AN DEN BONNER UNIVERSITATS-KLINIKEN. By Prof. Dr. Rudolf Finkelnburg, Bonn. A. Marcus & E. Webers Verlag, Bonn, 1920.

As the title of this paper-bound volume indicates it is made up of a series of contributions dealing with therapeutics as carried out in the Clinic of the University of Bonn. It contains 730 pages and deals with almost all departments of medicine, opening with a chapter upon Diseases of the Thorax, and then passing on to a consideration of the treatment of abnormal conditions in the Cardiovascular and Digestive Systems and the Liver, Gall-bladder, and Spleen. It also deals with Disorders of Metabolism, with Organic and Functional Nervous Diseases, with the Glands of Internal Secretion, and with the treatment of the various infectious maladies. Its scope is not limited to medicinal therapeutics but includes surgical therapeutics as well, and in the department of surgery the surgical methods which can be employed in all the conditions of disease which we have named are included, and, in addition, Orthopædic Surgery, Obstetrics and Gynecology are discussed. There are also chapters upon special therapeutic technique, such as acupuncture, treatment of hemorrhage, and, last of all, a chapter upon the employment of the waters of mineral springs in the treatment of disease.

CORRESPONDENCE.

CALCIUM SALTS IN HEMORRHAGE AND URTICARIA.

To the Editors of the THERAPEUTIC GAZETTE.

SIRS: In the June, 1920, number of the THERAPEUTIC GAZETTE you have an editorial on "Calcium Chloride as a Hemostatic." I have experimented considerably along this line and have reached some conclusions.

1. Calcium lactate or chloride in doses of 15 grains for the adult three times a day is a very good remedy for habitual nosebleed. In children it is nearly always successful.

2. Calcium lactate, 4 or 5 grains in 20 Cc. of water hypodermically, has apparently stopped the bleeding in several cases of pulmonary hemorrhage. In a case of melena neonatorum, 2 grains of calcium chloride hypodermically apparently saved the life of the infant. This case was reported in the *Journal of the A. M. A.* by me in 1906.

3. Calcium by the mouth is worthless in every kind of uterine hemorrhage.

Parenthetically, I might say that some cases of urticaria are quickly relieved by calcium hypodermically, although some are not benefited at all. Four or five grains of the lactate is sufficient and should be well diluted, for there is great danger of producing a slough. Caution in this regard is very wise.

I think that further experimentation along these lines should be encouraged. As has been so often and so well stated, a drug may be very useful in spite of the fact that some experimental work may contradict what seems to be clinically true.

Very respectfully yours,

G. WERLEY.

EL PASO, TEXAS.